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SAFE DRINKING WATER ACT AMENDMENTS OF 1995

HEARING

BEFORE THE

COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS UNITED STATES SENATE

ONE HUNDRED FOURTH CONGRESS

FIRST SESSION

ON

S. 1316

A BILL TO REAUTHORIZE AND AMEND TITLE XIV OF THE PUBLIC HEALTH SERVICE ACT (COMMONLY KNOWN AS THE "SAFE DRINKING WATER ACT"), AND FOR OTHER PURPOSES

OCTOBER 19, 1995

Printed for the use of the Committee on Environment and Public Works

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SAFE DRINKING WATER ACT AMENDMENTS OF 1995

THURSDAY, OCTOBER 19, 1995

U.S. SENATE,
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS,
Washington, DC.

The committee met, pursuant to notice, at 9:12 a.m. in room 406, Senate Dirksen Building, Hon. John H. Chafee (chairman of the committee) presiding.

Present: Senators Chafee, Smith, Faircloth, Kempthorne, Inhofe, Thomas, Baucus, Lautenberg, Lieberman, Reid, and Boxer.

OPENING STATEMENT OF HON. DIRK KEMPTHORNE, U.S. SENATOR FROM THE STATE OF IDAHO

Senator KEMPTHORNE [assuming the chair]. Ladies and gentlemen, I will call this hearing to order.

I would like to welcome all of you to this hearing concerning the reauthorization of the Safe Drinking Water Act, and certainly to all of the witnesses that are here today. We appreciate very much the time that you will be devoting this morning and the miles that you have donated to be here today.

I join with all members of this committee in welcoming each and every one of you.

The focus of this hearing is on S. 1316, a bill to reauthorize the Safe Drinking Water Act, that was sponsored on introduction by a significant majority of this committee. I believe it represents a broad consensus about how current law ought to be reformed, and I appreciate the commitment of the chairman of this committee, Senator Chafee, and the commitment and the cooperation of the ranking member of this committee, Senator Baucus, and the ranking member of the subcommittee, Senator Reid, and certainly Senator Kerrey of Nebraska. The role he played assured that we could achieve a bipartisan effort with this bill.

Administrator Browner and I have had more than one discussion about the best way to reauthorize the Safe Drinking Water Act. Ms. Browner, I am glad that you are here today, and also that we will have Governor Voinovich of Ohio and Governor Nelson of Nebraska, with their perspective, which is very important. The role that their organizations played in bringing this legislation forward—I would note that both of those gentlemen were extremely helpful with earlier efforts dealing with unfunded mandates; and Mayor Wennberg of Vermont. I found that Mayor Wennberg's testimony is very refreshing. Perhaps I see it through his eyes as a former mayor as well.

I am particularly pleased also to welcome Don Satchwell, who is a member of Idaho's Drinking Water Advisory Committee. Idaho's Advisory Committee has worked with me on this reauthorization. I am glad that Don could be here on such short notice to join us with this. He will also be representing the American Water Works Association.

The introduction of this bill also represents a commitment to reasoned reform and, as I said, bipartisanship by the coalition of State and local governments and drinking water-related interests. Rather than read each organization, I will ask that the list of the coalition members be made a part of the record.

[The list of the National Rural Water Association is printed with the materials found at the end of the hearing record.]

Senator KEMPTHORNE. The bill makes important improvements, I believe, and midcourse corrections to current law. As a result, I believe it will lead to better protection of public health.

The bill contains an improved process for selecting and regulating contaminants so that EPA can target its resources to important risks rather than trivial risks, and regulate based on better science, risks, and benefit costs. It provides flexibility for States to tailor Federal requirements, particularly monitoring and public notification requirements, to fit the needs in their States.

The bill contains no unfunded mandates, and common sense forms the basis of those mandates that are funded.

It favors a compliance-oriented enforcement strategy. It ensures more and better research into the health effects of things like cryptosporidium, arsenic, and disinfectants and disinfection byproducts. It establishes a framework that recognizes the important and continuing role that small systems will play in delivery of drinking water and which helps them meet Federal requirements rather than stigmatizing them.

Finally, I believe it establishes a forward-looking nonregulatory approach to solving the problems of source water contamination, and the technical, financial, and managerial capacity of water systems to provide safe drinking water.

I believe the bill achieves these objectives in a thoughtful and a reasoned fashion. The real test, of course, comes in hearing from the witnesses today and their perspectives concerning this bill that is before us.

I would just conclude, before turning this over to the chairman of the committee, Chairman Chafee, that I want to acknowledge, as we all know, the importance of staff in all efforts of this magnitude. I would like to thank Meg Hunt of my staff, who was chief architect, really, on behalf of my efforts with regard to this, and Buzz Fawcett of my staff, a tremendous team; and Jimmie Powell—really, this is the first time in this great a detail that I have been able to work with the great ability of Jimmie. Also, Jo-Ellen Darcy, Greg Daines, and Mike Evans. So there has been a great effort on everyone's part to have a bill that I think is tremendous and that is going to help public health.

[The prepared statement of Senator Kempthorne follows:]

STATEMENT OF HON. DIRK KEMPTHORNE, U.S. SENATOR FROM THE STATE OF IDAHO

Mr. Chairman, I join you in welcoming our witnesses today. The focus of this hearing is on S. 1316, a bill to reauthorize the Safe Drinking Water Act that was sponsored on introduction by a significant majority of this committee. I believe it represents a broad consensus about how current law ought to be reformed and I appreciate your commitment, and that of Senator Baucus, Senator Reid, and especially Senator Kerrey, to achieving a bipartisan result.

Administrator Browner and I have had more than one discussion about the best way to reauthorize the Safe Drinking Water Act. Mrs. Browner, I am glad that you are here today, and that we will also have an opportunity to hear from Governor Voinovich of Ohio, Governor Nelson of Nebraska, and Mayor Wennberg of Vermont. Each of them have contributed in one way or another to our arrival at this point in the reauthorization of the Safe Drinking Water Act.

I am particularly pleased to welcome Don Satchwell, who is a member of Idaho's Drinking Water Advisory Committee. Idaho's Advisory Committee has worked with me on this reauthorization, and I'm glad Don could be here on such short notice and on behalf of both the Advisory Committee and the American Water Works Association.

The introduction of the bill also represents a commitment to reasoned reform and bipartisanship by the coalition of State and local governments and drinking water related interests. Rather than read each coalition member by name, I ask that a list of the Coalition's member organizations appear in the record of the hearing following my remarks.

Mr. Chairman, the bill makes important improvements and mid-course corrections to current law. As a result, I believe it will lead to better protection of public health.

The bill contains an improved process for selecting and regulating contaminants so that EPA can target its resources to important risks rather than trivial risks, and regulate based on better science, risks, and benefit-cost.

It provides flexibility for states to tailor Federal requirements, particularly monitoring and public notification requirements, to fit the needs in their states.

The bill contains no unfunded mandates and common sense forms the basis of those mandates that are funded.

It favors a compliance-oriented enforcement strategy.

It ensures more and better research into the health effects of things like cryptosporidium, arsenic, and disinfectants and disinfection byproducts.

It establishes a framework that recognizes the important and continuing role that small systems will play in the delivery of drinking water and which helps them meet Federal requirements rather than stigmatizing them.

And, finally, it establishes:

A forward-looking, non-regulatory approach to solving the problems of source water contamination and the technical, financial, and managerial capacity of water systems to provide safe drinking water.

I believe the bill achieves these objectives in a thoughtful and reasoned way. The real test comes in hearing from our witnesses, who themselves bear the responsibility for assuring the safety of the Nation's drinking water supplies. I look forward to the discussion.

Senator KEMPTHORNE. With that, let me turn now to Senator Chafee, the chairman of the committee.

Senator CHAFEE [assuming the chair]. Thank you very much, Senator Kempthorne, and friends all gathered here today. I apologize—I'm trying to ride two horses this morning, both unsuccessfully, I suspect.

[Laughter.]

Senator CHAFEE. We have a very significant markup in the Finance Committee, and regrettably—this is contagious, I think. I thought we were the only committee to start at 9 a.m.; they learned of it, so they started at 9 a.m., too. Next time, we'll start at 8:30 a.m.

[Laughter.]

OPENING STATEMENT OF HON. JOHN H. CHAFEE, U.S. SENATOR FROM THE STATE OF RHODE ISLAND

Senator CHAFEE. I just have a brief statement. I hope everybody won't make long statements this morning. This is an extraordinary measure we have in which we have nearly everybody aboard. When you see the list of cosponsors and sponsors, including Senator Dole and Senator Daschle, that's what you call broad bipartisanship.

I want to congratulate and thank Senator Kempthorne for all the work he has done here on this. He has been very, very patient. It is a bill that we thought was going to be easy, and it didn't turn out to be so easy.

And I want to thank Ms. Browner and all her folks who helped so much, and the various groups that Senator Kempthorne was referring to.

If we were to ask what one thing we could do that would most improve the safety of drinking water in the United States, I think the answer would be to provide assistance to small drinking water systems. I think that's where the difficulties and the challenges arise. I believe that we have done a lot in this legislation in connection with solving that particular problem. It's not about compliance with Federal requirements; it's not about affordability. It's about proper training of operators. It's situations where more attention has to be paid to the supply and the distribution systems in order to get the contaminants and keep them out of the system.

So I will put in the balance of my statement.

[The prepared statement of Senator Chafee follows:]

STATEMENT OF HON. JOHN H. CHAFEE, U.S. SENATOR FROM THE STATE OF RHODE ISLAND

This morning we turn to the Safe Drinking Water Act and the reauthorization bill that was introduced last week. The bill has 24 sponsors and cosponsors, including Senators Dole and Daschle. That level of broad, bipartisan support reflects the hard work of many individuals and groups. The expert assistance that the committee received from the Office of Water at the Environmental Protection Agency and from the many groups in the State and local coalition is very much appreciated.

Carol Browner is with us this morning as are many of the groups who are members of the coalition. We have the opportunity to extend our thanks to them directly.

I would mention just one substantive matter this morning. If we were to ask: "What one thing can we do that will most improve the safety of drinking water in the United States?" I believe that many would say the answer is to provide assistance to small drinking water systems. There are a significant number of small public water systems in this country. Some are owned by homeowners associations or trailer parks, and some are operated by town governments. Many of these do not have the technical or financial resources to consistently provide safe drinking water.

I am not thinking here about compliance with Federal requirements. And this is not an issue of affordability. I have in mind systems where the operator has no training, where consumers pay no fees for the water, and where supply and distribution systems simply do not get the attention that is needed to keep contaminants out of the water.

The bill before the committee addresses this problem by asking that each State adopt a "capacity development strategy" to assist these small systems. We are relying on the States to take the lead on this issue. We have not gone as far as some have suggested. There is no heavy-handed mandate for States to consolidate nonviable systems. There are no enforcement authorities directed at operators who don't get training.

The bill *does* provide resources for training and technical assistance through the States and through groups like the National Rural Water Association. But we are looking to the States, to the governors and to the legislatures, to take the big steps. Here's a chance to show that a major problem can be resolved by the States through cooperation and incentives, rather than by commands and controls from Washing-

ton. The ultimate judgment on the success or failure of this bill will depend in large part on what the States do with this opportunity.

There is broad support for this bill. But we need to remember that the committee reported a bill by a vote of 17–0 last year. That bill passed the Senate 95–3. And the House passed a bill by a similar margin. Despite what appeared to be widespread support, those bills did not become law. That should be a lesson. All of us must keep working hard *and working together* to make sure *this* bill gets enacted.

Senator CHAFEE. This is what I'd like to do today. I will have to be back and forth, so if you would be good enough to run the show, I would appreciate that. Thank you.

Senator KEMPTHORNE [assuming the chair]. Mr. Chairman, thank you very much.

Senator Baucus, opening comments?

OPENING STATEMENT OF HON. MAX BAUCUS, U.S. SENATOR FROM THE STATE OF MONTANA

Senator BAUCUS. Thank you, Mr. Chairman.

Mr. Chairman, I am in the same situation as Senator Chafee, back and forth. We will do the best we can with both committees.

I don't think anything is clearer than the need to reform the Safe Drinking Water Act. We have all heard, particularly from our small systems, over the years. I am reminded of a wonderful Montanan who is here, Dan Keil, who will be testifying later, from Conrad, MT. We were talking yesterday about the long history of the Safe Drinking Water Act, and I said that a few years ago, Dan, you and I were trying to figure out what we were going to do about the Safe Drinking Water Act. He corrected me and said no, it wasn't a few years ago, it was about 6, 7, 8, 10 years ago that we were trying to do something about the Safe Drinking Water Act. I think that this year we are finally going to get it done.

The regulatory burdens that face small communities particularly are awesome. The monitoring requirements for contaminants that don't exist—it's nuts, it's stupid, but that's been in the law. Second, the technology requirements, particularly for smaller systems, are the same as for large systems; and obviously, the small systems can't begin to pay, and they face a much, much tougher burden, compared with the larger systems. It is frustrating to me that it has taken so long to change the current law, but nevertheless I think that this year we are finally going to do it.

I take my hat off to a lot of groups that have worked very hard together to put this together. It's the way legislation should be put together. When the various groups who are directly affected sit down at the table and begin to negotiate, we get a compromise solution where all sides basically work together, each giving and taking a little bit, rather than a top-down solution that sometimes this Congress attempts to enact.

I am thinking also of the Superfund legislation. Superfund legislation a couple of years ago—last year—was about to be put together because various groups worked together. They worked very hard together. I think of organizations like the Keystone Group, groups that worked together with the Congress and were on the verge of passing legislation. That's the way that legislation of that magnitude and of that complexity should be passed. The Safe Drinking Water Act legislation here is in that same ball park, where groups work together to get something done.

I commend all the groups. I commend the chairman. I commend the chairman of the subcommittee. I commend Senator Reid, who worked very hard. There are many Senators in addition, Senator Dole and Senator Daschle, who worked very hard, and I particularly commend the groups for working together, with a little give and take, to find a compromise, put partisanship aside, and work together.

This Congress now is much too partisan in too many arenas, too many areas. Both parties are divided much too much. As a consequence, good legislation is not getting passed; rather, legislation is being pushed through. It's not on a compromise basis. And mark my words, years down the road we're going to uncover many mistakes because there was not a compromise effort to try to pass legislation.

This is the exception, and I thank everybody involved.

Senator KEMPTHORNE. Senator Baucus, thank you very much.

Senator Craig Thomas.

OPENING STATEMENT OF HON. CRAIG THOMAS, U.S. SENATOR FROM THE STATE OF WYOMING

Senator THOMAS. Thank you, Mr. Chairman. I would like to file my statement, too.

I am a cosponsor, and I am pleased about that.

In Wyoming, at the University of Wyoming, we have kind of a new process. It's the Institute on the Environment and Natural Resources. It brings together lots of people; in fact, the chairman is former Administrator Bill Ruckleshaus. They had their first consensus-building meeting in April, I believe it was.

Let me just say, quoting from that meeting, "The current Safe Drinking Water Act has very important and desirable objectives; however, the act has been structured to make the achievement of those objectives difficult." It goes on to recommend that regulations must be reasonable, responsible, and flexible, and that drinking water safety should be more of a local responsibility, and that positive incentives should play a greater role. Finally, there should be some acknowledgement that zero risk is seldom necessary or achievable. It seems to me that that's a pretty reasonable sort of thing.

I hope that we can go forward without some of the exaggerated rhetoric, the so-called "environmental jihad." Every time we seek to work at environmental things, somebody comes up—I came through Denver the other day, the Vice President had been out there, and somebody came up and said, "Well, this will allow us to dump arsenic." That's not what we're doing, and that doesn't help us come to a consensus. So I hope the rhetoric will be as sensible as what I think has gone into the basis.

[The prepared statement of Senator Thomas follows:]

STATEMENT OF HON. CRAIG THOMAS, U.S. SENATOR FROM THE STATE OF WYOMING

Thank you, Mr. Chairman for holding this hearing, and for all your hard work over the past 9 months to get us to this point.

I'm pleased to be an original cosponsor of S. 1316, and look forward to its swift passage through this committee and the full Senate.

We all travel throughout our States extensively, and I can tell you the topic of regulation—specifically overregulation in the environmental area—comes up as much as any other topic when I hold meetings in Wyoming.

Folks are tired of the old top-down approach that mandates expensive regulations for questionable benefits, and cookie-cutter regulations that don't make sense.

The Safe Drinking Water Act has been an example of that old approach, and this bill, S. 1316, shatters it.

This bill is a recognition that we've got to find a better way to regulate. This bill says we can do a better job of protecting public health and at the same time inject common sense into the regulatory process.

In 1993, the University of Wyoming established the Institute for Environment and Natural Resource Research and Policy. This is a group of business leaders, members of prominent environmental organizations and government representatives formed to develop balanced approaches to environmental conflicts. The current chairman is former EPA Administrator Bill Ruckelshaus.

The institute held its first consensus-building forum on April 7, 1995 and chose to address the Safe Drinking Water Act. The participants addressed the problems of the current law and set down some principles and recommendations for reform.

Their report states, "the current SDWA has very important and desirable objectives. However, the act has been structured so as to make the achievement of those objectives difficult." The report goes on to recommend that regulations must be reasonable, responsible and flexible, that drinking water safety should be more of a local responsibility, that positive incentives should play a greater role and finally there should be some acknowledgement that zero risk is seldom necessary or achievable.

Their recommendations make a great deal of sense to me, and I think the bill before us today heads in that same general direction.

This bill helps communities who have had a hard time affording Federal standards by creating a Federal grant program to capitalize State revolving loan funds for drinking water treatment.

In addition to providing financial help, the bill cuts costs by overhauling the regulation process. The mandate that 25 new contaminants be regulated every 3 years, regardless of real-world occurrence or threat to human health is repealed. Finally, EPA will be able to prioritize efforts on those contaminants that truly are a threat.

Cost benefit and risk-risk is inserted into the process, State roles are increased and systems will be able to focus their monitoring efforts on contaminants that actually occur in their systems.

There are many other important aspects of this bill, but the bottom line is that nearly everyone recognizes the status quo is failing and it's time to make significant changes.

There are a few extremist groups clinging to their chicken-little mind set that will once again say the sky is falling with this legislation. Thankfully, the majority of Americans have grown tired of their broken record.

This bill makes sense, it furthers the protection of human health and it enjoys wide-spread bipartisan support. S. 1316 is a bill the President can support—a bill he should support without reservation—and we should get it to his desk as soon as possible.

Thank you again, Mr. Chairman for holding this hearing and I look forward to the witnesses.

Senator KEMPTHORNE. Senator Thomas, thank you very much.

Senator Joe Lieberman.

OPENING STATEMENT OF HON. JOSEPH LIEBERMAN, U.S. SENATOR FROM THE STATE OF CONNECTICUT

Senator LIEBERMAN. Thank you, Mr. Chairman. Let me just join in the very deserved chorus of appreciation for the work that has been done here to bring the different groups together. Unfortunately, this is a session in which a lot of environmental legislation has been an occasion for division and, frankly, the arousing of some fears on all sides about what's happening here. I think under your leadership, you have proven that we can get together when there's a clear public interest and there is a role for government to play that is appropriate and not excessive, to protect something as basic as safe drinking water.

I remember being at a town hall meeting in Connecticut when a man got up and said, "You know, I consider myself to be very conservative, but it seems to me that if there's nothing else my government can do for me, it ought to guarantee that when I turn on the tap, the drinking water I'm drinking and giving to my family and kids is safe." And I think you've carried out that basic principle here.

I also think one of the discussions going on about regulatory reform, the proposal that you've put before us, sets a good standard for the appropriate use of cost-benefit weighing, and I applaud you for that.

I have what I would call not so much a concern as a desire for clarification on the way in which the proposal affects source water protection, which is something that we've been involved with heavily in Connecticut, supported by both the State and the water companies, which is basically pollution prevention, trying to keep the pollution out of the reservoirs so that we don't have to spend a lot of money in cleaning it up before it gets to us in our tap. I look forward to trying to clarify that provision of the bill.

But generally speaking, Mr. Chairman, I applaud you, and I also thank Administrator Browner for the role that I know she played in bringing us to this stage.

Senator KEMPTHORNE. Senator Lieberman, thank you very much.

Senator Inhofe.

Senator INHOFE. Thank you, Mr. Chairman. Consistent with the admonishment of Chairman Chafee, I will keep it very brief.

There are some good things in here that provide a lot of relief for my State of Oklahoma, particularly in some of the small water districts, those serving less than 10,000 people. It's going to offer some relief in terms of relaxing some of the repeat testing, which we feel can reduce our local costs by about 75 percent. It also allows them a variance from some of the State standards.

In Ada, OK, we have the Kerr Lab, which will be able to continue with its consortium of universities for ground water quality protection. I believe we are going in the right direction with the cost-benefit analysis that can be used to set standards.

So, Mr. Chairman, I think you have done a remarkable job of bringing a group of people together with a bill that I think is good for everyone, and I commend you for it.

Senator KEMPTHORNE. Thank you very much. I appreciate that.

Senator Lautenberg.

OPENING STATEMENT OF HON. FRANK R. LAUTENBERG, U.S. SENATOR FROM THE STATE OF NEW JERSEY

Senator LAUTENBERG. Thanks very much, Mr. Chairman. Adhering to the chairman's request for all of us not to make long statements, I hope that my colleagues won't, but I'll be a good guy this morning and I'll make mine short.

Senator KEMPTHORNE. We've got the clock on you.

[Laughter.]

Senator LAUTENBERG. I saw that watchful eye, Mr. Chairman.

This committee has had a history of bipartisanship, at least in my service on this committee, which goes back almost to the time I arrived in the Senate. That's due largely to the efforts of Senator

Baucus, the former chairman; Senator Chafee, the current chairman; and those who want to get something done, and I want to commend you for your leadership in this particular bill, Senator Kempthorne. You've demonstrated a willingness to listen and to exchange ideas, and I think that's good. That's why we're at a place here where we can deal with a consensus view.

Senator Lieberman said something about a fellow turning on the tap. For many Americans, getting their drinking water means turning on the bottle. I'm not talking about spirits; I'm talking about just simple water, things that we expect to have as part of a democratic society. We don't think that we ought to be worrying about our children, regardless of income levels, regardless of location, by having to deal with material that is threatening their health, out of the tap. It's so fundamental that it's shocking, but we see more and more bottled water being sold. People are frightened themselves at having polluted water come out of their taps.

So this is a very important step. I hope that this legislation is going to pass. It doesn't please everyone, and no legislation does that has any possibility of getting through the mill.

So I commend you, and I commend Carol Browner. She's done a terrific job as the Administrator, and her team, in putting together this bill. I hope that we will see it move expeditiously. Thank you very much.

[The prepared statement of Senator Lautenberg follows:]

STATEMENT OF HON. FRANK R. LAUTENBERG, U.S. SENATOR FROM THE STATE OF NEW JERSEY

I, too, am looking forward to the testimony of Carol Browner today on the Amendments to the Safe Drinking Water Act.

But first, Mr. Chairman, I would like to express my appreciation to you and Senator Kempthorne for the open process you established for drafting this bill. Staffs of both sides have been meeting since February and almost continuously over the past several weeks. This process has produced a bill that, although imperfect, does improve the Safe Drinking Water Act.

Mr. Chairman, this committee has a proud history of working in a bipartisan manner. Environmental legislation has been a joint enterprise going back to at least 1969. This bipartisanship continued when the Democrats chaired the committee from 1969 to 1980; through Robert Stafford's tenure as chairman in the early 1980's and is working today as demonstrated by this bill. The legacy of this process has made the environment and the Federal status that protect the environment the model for the industrial world. More important, it has led to cleaner water, cleaner air and safer disposal of wastes. It has led to a better world.

Mr. Chairman, in any compromise, especially in this second generation of environmental statues, agreement does not please everyone. Reaching a consensus requires both sides to accept provisions they would rather not have. There are provisions in this bill I would like to strengthen, and I am sure others may wish to weaken. However, viewed overall, this bill is a very good starting point. Again, my hat is off to the chairman, and Senators Kempthorne, Baucus and Reid for the excellent job they have done. This continues a 26-year legacy that we alter at our peril.

Senator KEMPTHORNE. Senator Lautenberg, thank you very much.

Senator BAUCUS. Mr. Chairman, I have to leave, and I just want to excuse myself. My apologies to Administrator Browner and the Governors and others who are going to be testifying. We are, as Senator Chafee said, involved in the Finance Committee in a markup of the tax bill, and I must leave. I wish you the best.

Senator KEMPTHORNE. All right.

Senator Faircloth.

Senator FAIRCLOTH. Thank you, Mr. Chairman.

Senator Chafee, since I wasn't here to hear your admonishment to keep it short, I guess that means I can talk a long time.

[Laughter.]

Senator FAIRCLOTH. I want to thank Senator Kempthorne for the effort he has put forth on this bill and the work he's put into it. It is a good bill, and I'm proud of the work you've done on it, Senator Kempthorne.

Senator KEMPTHORNE. Thank you very much.

Senator Boxer.

OPENING STATEMENT OF HON. BARBARA BOXER, U.S. SENATOR FROM THE STATE OF CALIFORNIA

Senator BOXER. Thank you very much.

First of all, Mr. Chairman, I want to thank you, Senator Chafee, and Senator Kempthorne, for your leadership, along with Senators Baucus, Reid, and, of course, the wonderful Administrator Carol Browner, for getting us to this point. I think it is a model in this Congress, and when Senator Baucus said he wished us luck, I want to wish him luck because it is a very contentious markup compared to this bipartisanship that we're having over here, which I think is a model and is a tribute to the people on this committee. So I am very pleased.

I am also pleased that Bill Mills is here from Orange County Water District. He will be testifying on behalf of the Association of California Water Agencies.

Since a lot of times we hearken back to our experiences as public officials, I think back to the hundreds of community meetings I've had ever since I've been a county supervisor, and that goes back much longer than I care to admit, and I've never had one person come up and say "Supervisor Boxer," or "Senator Boxer" or "Congresswoman Boxer," "you're doing too much to protect our water supply; please, lay off." On the contrary, they want us to protect the water supply, and I think that cuts across party lines and cuts across age because it's common sense. We want to have safe water. We don't want our people getting sick.

When I was growing up, that was the "bread and water." That was it. My mother said, "If all else fails, bread and water will keep you alive." Well, we want to make sure that that's true.

There are just a couple of areas of concern that I am going to mention quickly here, that I have.

I think that the bill is an excellent, excellent effort. Of course, as Senator Lautenberg says, not everybody will be pleased, so I'm just going to mention two areas that I hope to work on to make stronger.

I am concerned that EPA may not be able to respond quickly enough to urgent health threats, so I'm going to be looking at that part of the bill, to make sure that when we have an emergency—and we have to remember that the Centers for Disease Control estimated that 940,000 people are sickened and 900 die from contaminated tap water in the U.S. every year. EPA has confirmed in 1993 and 1994, 47 million Americans—one-fifth of the population—drank water from systems that were confirmed to contain excessive bacteria or turbidity at levels above the health standards.

So as far as I'm concerned, I think it's very important that they can act quickly. So I am going to be asking questions, and maybe at the appropriate time when we do get to markup, offering some amendment on that.

And then the consumer's right to know what the water contains is another area that I'm concerned about.

So, Mr. Chairman, both Mr. Chairmens, both subcommittee and full committee, my deepest thanks for getting us to this point. I know you wouldn't think all was well if I agreed with everything in the bill, so I just set out those couple of areas, with commendations to everyone who got us this far.

[Laughter.]

Senator KEMPTHORNE. Senator Reid, opening comment?

OPENING STATEMENT OF HON. HARRY REID, U.S. SENATOR FROM THE STATE OF NEVADA

Senator REID. I am grateful that we are moving forward with this legislation. I think that we, as a committee, have to show some positive movement. We haven't done enough of that.

I am glad to see this very needed legislation, to a point where we hope we can, in the next few months, move it on the floor. I can say that following the press that occurred as a result of the introduction of this legislation, I have received very positive comments from people in Nevada. There are a few little kinks in the legislation, but I think these things are very minor and we can work them out.

Senator KEMPTHORNE. Good. Senator Reid, thank you very much.

Mr. Chairman, would you like to introduce our first witness?

Senator CHAFEE. I want to welcome Carol Browner.

Ms. Browner, why don't you come up forward?

I also see Governor Voinovich in the audience, and others. I want to tell everybody here that Governor Voinovich has lots of extra tickets available for the World Series, so be nice to him.

[Laughter.]

Senator CHAFEE. He is flying high.

It's so nice to see you again, George. If there's a little back-and-forth here, coming and going, I don't want anybody to feel that we're not interested in what you're trying to say; it's just, as Max Baucus said, we're kind of pulled in several directions.

So, Ms. Browner, why don't you go ahead? Your testimony will be very helpful.

Before we start, I want to thank Senator Reid for his help in all this. He is the ranking member on the subcommittee and he has been very helpful.

So, Ms. Browner, why don't you go at it?

Let me also say that I think things seem to be going pretty well. Obviously we will be listening to the comments today, for changes that might be incorporated in the legislation. I just want to go to a markup and get this to the floor as soon as possible. I have indicated to the majority leader that I thought we could do it in the first part of next month, that we can have a markup and get it out there.

I will say one final thing. Yes, things are great, but just remember that last year we passed a water bill, something like 92 to 4,

and in the House likewise, and the bill didn't pass. So we're not over all the hurdles yet.

Ms. Browner.

STATEMENT OF HON. CAROL M. BROWNER, ADMINISTRATOR, ENVIRONMENTAL PROTECTION AGENCY ACCOMPANIED BY: ROBERT PERCIASEPE, ASSISTANT ADMINISTRATOR FOR WATER

Ms. BROWNER. Thank you, Mr. Chairman and members of the committee. It is indeed a pleasure to be before you again. I appreciate the opportunity to speak on behalf of the Clinton administration about a matter of concern for all Americans, the safety of the water we drink.

With me today are a number of my colleagues from EPA, including Bob Perciasepe, EPA's Assistant Administrator for Water. They have worked very closely with the staff on both sides and appreciate the process that Senator Kempthorne and others have created for discussions about this very important issue.

Clean, safe water to drink is fundamental to the American quality of life. Two years ago the Clinton administration sent to Congress our recommendations to strengthen the Safe Drinking Water Act. We continue to believe, we continue to seek, a new law that will strengthen public health protection; provide improved regulatory flexibility; promote preventive efforts to keep the pollution and contamination out of our drinking water in the first place; and provide funding to help communities upgrade their drinking water facilities.

Currently, more than 30 million Americans receive their drinking water from systems that have violated health and safety standards within the past year. Concerns over pesticides in river water continue to damage public confidence in drinking water, as do emerging threats, such as Cryptosporidium, the microscopic contaminant that caused a crisis in Milwaukee, in which hundreds of thousands became ill and more than a hundred died. We can and we must do better.

I believe that S. 1316 sets an acceptable framework and is a step in the right direction. I want to applaud the sponsors of this bill for their commitment to finding common ground in the effort to protect the public's health.

I want to begin by commending the bill's sensible approach on standard-setting. This framework will allow EPA to focus our resources—the taxpayers' resources—on the most important future risks to public health without weakening existing protections.

The bill allows cost and benefit considerations to be a factor in setting drinking water standards, but preserves the Clinton administration's fundamental principle that public health protection must be the paramount concern. Cost-benefit analysis and risk assessment are useful tools, and an essential part of responsible reform.

Mr. Chairman, I might say that we are hopeful that Congress will follow the sensible approach adopted here when considering changes to other laws designed to protect our Nation's natural resources, human health, and the environment.

The bill also takes an important step forward by explicitly requiring EPA to consider the greater risks that some groups—children, infants, the elderly—face from drinking water contaminants.

I am concerned, however, that the administrative process specified in the bill, combined with other actions of Congress, may be somewhat cumbersome, mandating a number of very specific steps that could waste limited Federal resources by requiring overly exhaustive analyses and unnecessary procedural steps. We would like to work with the committee to streamline this process, these analyses, and to ensure that we are able to move at an appropriate speed to provide the public health protections, to ensure that administrative efforts aren't unnecessarily duplicated.

I am also concerned that the bill's sweeping science standard applies to all aspects of the Act which, we believe could impede a host of decisions that are not science-related. For example, an enforcement action could be challenged for failure to submit that to scientific peer review.

It would also, we believe, inappropriately inject courts into every scientific decision.

We share the commitment to peer review of the science process, of the science decisions. This Administration has made fundamental changes at EPA in how we use peer review, requiring it on virtually every science decision we make. We would like to work with the committee and other Members of the Senate to improve this provision so that sound peer reviewed science is required when appropriate to protect public health.

Common sense dictates that preventing drinking water problems before they occur is the most cost-effective way to remove contaminants, far better than doing it after the fact. The system we have today is one in which the contaminants go into the river or the lake, that becomes our drinking water, and then we pay to take them back out. Preventing the pollution in the first instance is a principle that must be the centerpiece of a new, strengthened Safe Drinking Water Act. This bill includes numerous commendable preventive measures. Among those measures is the creation of a State Revolving Fund, an SRF, to help communities upgrade their drinking water treatment facilities. Creating such a fund has been one of the President's primary goals for guaranteeing safe drinking water for all Americans. We believe that the Federal Government should be a partner—not just in the setting of standards, but in meeting the costs associated with providing clean, safe water for the American public to drink.

The drinking water SRF authorized in this legislation represents one of the most important advances in the Nation's drinking water program since passage of the original act in 1974.

The SRF provisions in this bill also provide an interim source of funding for important new preventive programs. We strongly support these activities. We just want to register a small concern that we not allow too many setasides from the SRF, that we not deplete the dollars that the States can use in creating the revolving fund, so that the low interest loans can be made to the communities to upgrade the systems.

I encourage the committee to consider setting a cap on the setasides and allowing the States more flexibility to set spending priorities.

I applaud your efforts to protect the sources of drinking water by providing funds to States for delineating and assessing source water areas. This will provide communities with vital information about risks to their drinking water so that they will be equipped to take appropriate steps, as they see fit, to reduce these risks.

I believe, however, that the bill must include even stronger measures to protect public health by preventing contamination of sources of drinking water, and we would like to work with the committee to improve the petition program in the bill and to ensure that the program is designed not only to address the existing problems in source water, but equally important, to avoid the creation of future problems.

I would also like to commend you for requiring that the States have legal authority to review the financial, managerial, and technical capacity of systems before they begin operations. The provision for helping existing systems to develop their capacity is also a significant improvement over current law. This provision and others, such as monitoring flexibility and new affordability variances, are important new tools to help ensure safe drinking water, particularly in communities served by small drinking water systems.

Finally, this Administration has made considerable progress in expanding public participation in our decisionmaking and in strengthening EPA's partnership with the local water suppliers, States, and other Federal agencies, including the Centers for Disease Control and Prevention. I am pleased that this bill will help us continue our efforts in this direction.

In closing, Mr. Chairman, I believe that this bill provides an acceptable framework for providing needed regulatory flexibilities while strengthening the protection of public health. The balance that you have struck in this bill is, indeed, a delicate balance. It is absolutely essential that the public health protections now in the bill not be weakened as this process moves forward.

Again, we thank you for the opportunity to comment on this important legislation. I want to commend you, Mr. Chairman, Senators Kempthorne, Baucus, and Reid, for the very constructive and consultative processes you have pursued in developing your bill.

There is a long history of bipartisan support in this country for strong environmental and public health laws. This bipartisan commitment is critically important if we are to continue the progress of the past 25 years.

We look forward to working with the committee and the other Members of the Senate to address the concerns we have raised and to achieve a new, strengthened Safe Drinking Water Act that will protect the health of all Americans.

Senator CHAFEE. Well, thanks a lot, Ms. Browner. I think your suggestions are good, and certainly we'll work on those. I don't think any of us want a complex system; none of us want every decision going to the courts, so let's see if we can do something about it.

Could you briefly answer the question about arsenic? In the 1986 amendments we had requirements that you revise the standards on

arsenic, and that's never been done. Now, if you're not prepared to answer that, you can do that by submitting something.

Ms. BROWNER. I would be more than happy to make a brief comment, and then we could elaborate on that for the record.

As you say, we do have a standard for arsenic currently in place. It is based on non-cancer end points. There is growing scientific evidence that arsenic may also cause certain types of cancer.

The science on this has been extremely difficult. It is an evolving body of science. We believe that the language that has been included in this bill will be extremely helpful in allowing us to complete this task and take whatever steps may be appropriate for public health protections.

Senator CHAFEE. OK, thank you very much.

Senator KEMPTHORNE. Mr. Chairman, thank you very much.

Senator Lautenberg.

Senator LAUTENBERG. Mr. Chairman, in the interest of moving the process, I will submit some questions to Ms. Browner. I have a Transportation Subcommittee that I have to go to, so I will defer to my colleagues, Mr. Chairman.

Senator CHAFEE. Senator Reid.

Senator REID. Senator Lautenberg and I were speaking earlier, and I think it's worth talking about here publicly. I think we tend to look at a lot of the legislation we do in the big picture. We talk about a lot of things that really, to we, the insiders, mean a lot, but when you really bring it down to a micro level, it's different.

In your statement you say "Currently, over 30 million Americans annually receive drinking water from systems that have violated existing safety standards. Lingering worries over pesticides in river water and emerging threats such as Cryptosporidium," etc.

This is something that has really frightened the American public. I can afford to buy bottled water, and that's what Senator Lautenberg and I were talking about. I pay more for my bottled water than I do for milk. I don't go shopping very often, but when we came home from Nevada this weekend we stopped and bought some water. My wife asked me to go get some, and I went to the shelf. The cheap water was $1.29 for—I guess it's a quart; I don't know how much it is, a bottle about that big. Most people can't afford to buy bottled water, so they drink the water that may or may not be good.

I think that's what the Safe Drinking Water Act is all about. So America, which has the reputation for the purest food and the safest drinking water, will continue to have just that, but also have the confidence of the American people that when they drink water out of a tap, they don't have to boil it.

Ms. BROWNER. I certainly agree with you, Senator Reid, that it is troubling and an important indicator of just how little confidence the public has in the drinking water systems and supplies of this country, the fact that we have seen an astronomical growth in the bottled water industry.

Clearly, people are willing to make sure that their families have safe water to drink, and I think we as Government have an obligation to provide safe water for families to drink.

The provisions in this bill creating the SRF, the State revolving fund, Federal dollars, brand-new, never before available, particu-

larly for the small systems, I think will be very, very helpful in rebuilding that public confidence in the drinking water systems of the country.

Senator REID. One last question, Mr. Chairman.

I have gotten mixed reports on this. The bottled water—do we have any assurance that that's safe?

Ms. BROWNER. I—the——

Senator REID. That's the answer I've gotten most of the time.

[Laughter.]

Ms. BROWNER. It's a complicated situation. In some instances there are companies that test their waters to the extent that public water systems are tested. Probably none do it quite as much as a public water system. In other instances there are bottled waters that are not tested. I will tell you, as the mother of a young child who has spent a lot of time looking at this issue, we drink the city water because I know that there are certain tests being done on a daily or weekly or monthly basis. I think there should be more done; I don't think the current system is adequate, but I don't have the confidence in bottled water that I have in city water.

Senator REID. Will this legislation do anything about bottled water?

Ms. BROWNER. Yes. It does have a provision on bottled water that would require the Food and Drug Administration to adopt the standards that are adopted for city waters more quickly, and to ensure that those standards are being met.

Senator KEMPTHORNE. All right, Senator Reid, thank you very much.

Senator Faircloth.

Senator FAIRCLOTH. Thank you, Mr. Chairman.

I have just one comment, Ms. Browner, and you might want to refer it to someone else—maybe back to the chairman.

This bill doesn't specifically prohibit the Government from enforcing the Davis-Bacon labor standards in the construction of drinking water treatment plants. What is the position? Where do we stand? It doesn't say that it does and it doesn't say yes or no, as I read the bill. What is the position?

Ms. BROWNER. Well, I would be more than happy to speak to the Administration's position on Davis-Bacon. We do believe in this Administration that Davis-Bacon should apply to all federally funded projects. Mr. Kempthorne might want to speak to his interpretation of the legislation.

Senator KEMPTHORNE. Well, that's very well——

[Laughter.]

Senator KEMPTHORNE. I would be happy to respond.

First of all, I would just say that Senator Faircloth has not disappointed me in raising this issue. As Senator Faircloth knows, I feel that we can make these finite and precious Federal dollars go so much farther by not making Davis-Bacon apply.

I don't know that this would be the place for the debate, but this is an amendment that we can perhaps anticipate, a discussion on this whole issue of Davis-Bacon.

Senator REID. Mr. Chairman, I don't understand what Davis-Bacon is. Could you explain it?

[Laughter.]

Senator CHAFEE. Let me just say this. There was one bill that we brought out that dealt—you have to specifically put in that Davis-Bacon doesn't apply; otherwise, it applies, because that's the underlying law. We brought a bill out of here, the National Highway System bill, that said Davis-Bacon did not apply. Well, there was a filibuster, and there was a filibuster on the motion to proceed. And that filibuster prevailed. So then we dropped that provision so that we could get on with the bill.

There is another bill currently on the floor that is held up on the same thing.

So we are anxious to get this bill approved, and the way life is right now—I'm not for Davis-Bacon; I think that it raises the costs and is unnecessary, but nonetheless, that's not the view that prevails on the floor of the Senate.

Therefore, if we put in that Davis-Bacon does not apply here, we just have a filibuster and wouldn't get on with the bill, and presumably we would have to take it out if we wanted to move forward with the bill.

So I am anxious to get this bill going.

Senator FAIRCLOTH. All right. I have no objection; I just wanted to make it clear, in case there was any doubt where I stood on Davis-Bacon.

[Laughter.]

Senator FAIRCLOTH. I guess I did.

That's all the questions I have.

Senator CHAFEE. Well, I appreciate your clarifying your position.

[Laughter.]

Senator FAIRCLOTH. Well, vagueness is one of my problems.

[Laughter.]

Senator KEMPTHORNE. All right.

Senator Faircloth, I would just note that I don't think you have had trouble making clear your point on any issue, and we appreciate that.

Senator Boxer.

Senator BOXER. Thank you very much.

I agree with the chairman that Federal dollars would go much further if we paid lower salaries. It raises the whole issue of how families support themselves, etc., etc., but we will not have that debate now, and I am sure we will at some later time, again and again, until this is resolved.

Senator KEMPTHORNE. Would you cosponsor Senator Faircloth's amendment?

Senator BOXER. Well, let me take a look at it.

[Laughter.]

Senator BOXER. I am always fair to my colleagues.

Secretary Browner, I raised two issues that concern me in my opening statement. I would like to follow up.

Do you think the bill, as it is currently drafted, gives you—the EPA—sufficient flexibility to deal with urgent health threats? Because that concerns me. In the event that chlorine byproducts are discovered to cause birth defects, it is my understanding that the EPA would have to go through an advanced notice of proposed rulemaking and cost-benefit analysis before being able to issue an interim standard. What concerns me is if there is a solid scientific

breakthrough that says that this is clear to us, that it might take too long a time.

How do you read the bill in that regard?

Ms. BROWNER. We share your concern, Senator Boxer, over the ability of the agency to move expeditiously where there is an urgent and imminent threat. The process that's created is a little too complicated. There are too many steps; you make reference to just one of them.

We would like to work with the committee to see if we can't streamline any process that we would follow in dealing with and taking actions to address an urgent and imminent threat. We do think that the process in the current proposal is rather cumbersome.

Senator BOXER. Well, Mr. Chairman, I hope there is a way that we can work together on that, because the last thing that we want is to have a clear scientific opinion that is noncontroversial, where people agree that it's based on science, then tie the hands of the EPA to remedy the problem, to set the new standards.

I have another question that has to do with the community right to know. As I read it, this bill will only require public notification in cases where there has been a violation of standards. California law requires water systems to provide their customers with an annual report on the quality of their tap water. I think that's a very important point. For example, I sure would like to know, frankly, if it's bottled water or if it's tap water—is my family drinking water that contains amounts of Cryptosporidium, for example? I think the public has a right to know.

We are certainly moving in that fashion with food labeling and the rest, so do you think we could do better in terms of an annual report on quality of tap water? Would that be too burdensome, too cumbersome, a problem, expensive? How do you see that?

Ms. BROWNER. Well, I certainly agree that one of the fundamental checks and balances in any public health and environmental protection program is the public's right to know. Information to the public is extremely important. It has been demonstrated over and over again that when the public is informed, they can become better participants in making the decisions that ultimately affect their health.

California has a very good and strong provision as it relates to informing the public about contaminants in their drinking water. As we read the bill, the Federal requirement would be limited, as you said, to violations. It would not require notification of the level of contaminants found unless a violation had actually occurred.

I certainly think that to err on the side of more information to the public is something in the interest of all of us, and we would certainly be willing to support a provision in this legislation that's built on the success of the California program.

If I might just mention another issue that your question raises, and that is the question of whether or not in any way current State programs, whether it be the California right-to-know program, or the Connecticut program dealing with source water protection that Senator Lieberman made reference to, would be preempted by this bill. We hope that in no way the bill preempt the ability of States who have been willing to go further. I think it is important to pre-

serve the right of the States to make individual decisions in terms of what they want to do beyond what the Federal requirement is.

Senator BOXER. So right now the bill would permit the States—is that what you're saying?

Ms. BROWNER. We have read the bill to understand that States would continue to have the authority—in both the case of California and in the case of Connecticut—to take the actions that they currently take, and we would obviously want to oppose any interpretation that those States cannot so act.

Senator BOXER. Mr. Chairman, do I have time for one last question, very briefly?

Senator KEMPTHORNE. Very briefly.

Senator BOXER. OK.

Senator KEMPTHORNE. With a very brief response.

Senator BOXER. I am concerned about sensitive subpopulations, and offered an amendment on the Senate whenever it was that we did this bill, which protected those populations in terms of when we set standards for the maximum contaminant level goals and the maximum contaminant levels. My understanding is that the bill is good on that point, which I'm very excited about, and I wonder if you could let me know if I'm right in interpreting it that way.

Ms. BROWNER. We believe you are absolutely right. I think this is one of the very important provisions in this bill. It is indeed a strengthening provision which we support.

The way in which the sensitive subpopulation information is then used in conjunction with the standard-setting provisions of the cost-benefit analyses that are brought forward in this bill, we think is absolutely appropriate and, quite frankly, essential.

Senator BOXER. Thank you very much, Mr. Chairman.

Senator KEMPTHORNE. Thank you, Senator Boxer.

I would note that we have made available and earmarked a significant amount of money to deal with that issue.

Senator BOXER. Thank you very much.

Senator KEMPTHORNE. Senator Smith.

Senator SMITH. Thank you, Mr. Chairman and Administrator Browner.

Let me compliment you, Mr. Chairman, for an excellent piece of legislation. I know you've worked a long time on it. It's long overdue and we are very grateful for the good job that you've done.

Senator CHAFEE. I always get nervous when there's a long phrase like that.

[Laughter.]

Senator CHAFEE. Is the next word going to be "but"?

[Laughter.]

Senator SMITH. No. Then I was going to also compliment Ms. Browner for her cooperation, not only on this legislation but the cooperation that I've received from the Administrator and her entire office on the Superfund bill. We've had a good working relationship.

I think frankly, Administrator Browner, you've gone out of your way—not in compromising your views, but you have gone out of your way to be very accommodating in working with all of us on all of these pieces of environmental legislation. I just want to say for myself that I appreciate it, and I know that others feel the same way.

I only have one issue that I will address at this point. I apologize for missing your opening remarks. I don't believe it was touched on in your opening remarks; if it was, just say so, but I don't believe that it was.

It's the issue of radon, in that there's still a lot of debate about the potential health effects of radon in water. I think Senators Lautenberg and Johnston had proposed a new study, I believe, in the appropriations bill.

If the data were to show that low-level exposure is not the threat that EPA currently believes it is, or at least that the data that you currently have would support that it is, what would you do if the bill were to become law? In other words, if this bill were to become law, do you feel you have the authority under this bill to adjust the radon standard downward if it is justified to do so?

Ms. BROWNER. If the peer-reviewed science showed that was appropriate, then the authority exists.

If I might just say something more generally about radon, because this has obviously been an issue of great concern.

Radon is the second largest cause of lung cancer in this country, and that's the point I want to get to. We have long believed that a multimedia approach to radon would best serve the health of the people of this country. You point out the issues of air; the radon from water ultimately affects people because they breathe "fumes," for lack of a better word.

We continue to think that if there were a way to receive multimedia authority to address this problem, that would be the most sensible way. That has not heretofore occurred. We have been looking at these on a medium-by-medium basis.

Senator SMITH. We know the jury is still out, but a lot of us feel that the evidence is fairly compelling in the air. It's less obvious in water, and some of us believe that maybe we just made assumptions about water which caused some of the more stringent decisions to be made.

That's my concern. If you went with some of the earlier standards that we had on radon, you would literally have to close down most of the wells in New Hampshire, and probably in other States as well. I think what we're looking for is some reason.

My only purpose in asking the question, Mr. Chairman, is that if science does support data that says it's not as hazardous as some would believe, do we have the authority under this legislation to make adjustments? I think what you're basically saying is yes. That's fine.

I don't have any further questions, Mr. Chairman.

Senator CHAFEE. Ms. Browner, I know that Senator Kempthorne has a couple questions.

I would just like to say to the Governors—they will be coming on in a minute; I do have to go down to the Finance Committee—but I want to welcome Governor Nelson and Governor Voinovich and Mayor Wennberg from Rutland. I know they'll be testifying, and I hope to get back in time for their testimony.

I also want to take the occasion to thank Bob Perciasepe and Cynthia Dougherty from your staff, and of course from your agency, your assistant administrators, for the work that they've done. They've been very, very helpful. I want to echo what Senator Smith

has said; you folks have been very helpful on this issue, and other issues, and there will be others coming along, as you know. Thank you.

So to the Governors and the Mayor, I apologize for having to leave, and I will be back.

Thank you.

Senator KEMPTHORNE. Mr. Chairman, thank you very much.

Carol, I would echo his comments with regard to Bob and Cynthia, and also Julie Anderson, who is a key participant in this, too.

A few questions. To begin with, though, I've always had this belief that with our finite dollars at the local, State, and Federal level, we ought to go after those contaminants that really pose a threat to our public health and life. So do you agree with me that we now have the framework—and in fact, I'll quote from your opening statement; you said, "The standard-setting framework allows EPA to focus in the future on the most important risks to health without weakening existing protections."

So do you feel this bill will now allow EPA to go after things such as Cryptosporidium, and enhance public health?

Ms. BROWNER. Yes, we do. And the simple reason why we believe that is the elimination of the "25 every 3 years" requirement. We've all spent a lot of time understanding the history that brought us to that point in the last reauthorization. I think you have struck an appropriate balance here; you've removed that requirement, but you haven't said, "EPA, decide if you ever want to do anything again." There is still a requirement that EPA undertake analysis of a certain number of contaminants on a regular basis, and we think that that is an important requirement, but removing the "25 every 3 years" really will allow us to focus on the emerging threats, such as Cryptosporidium.

Senator KEMPTHORNE. OK. Good. I appreciate that.

And then I believe I understand, but I'm not certain that I share your concern, about the new analytical and procedural requirements contained in the bill's standard-setting process. From your statement, don't you agree that better public participation and better scientific and cost-benefit basis for standard-setting is crucial to reaching the right public health result?

Ms. BROWNER. We do agree with the philosophy that you articulate. Again, the way in which you have crafted the cost-benefit provisions of the standard-setting process is one that we agree with and, as I said earlier, we think could be a model for other legislation.

The concern we have, quite frankly, is the number of hoops that we must move through. The easiest way for me to demonstrate this is just to do it visually.

This is the current process and, as we all know, it takes us a long time to come through it.

This is the new process.

What we would like to do, Mr. Chairman, is just work with you to ensure that there is no duplication in here and to make sure that we have a streamlined process so that we are not using taxpayer dollars to do something two or three times that, perhaps, if better done the first time, would fulfill the commitment to public participation, to strong standard-setting processes.

Senator KEMPTHORNE. All right. Because, again, our effort is to improve public participation in achieving these standards.

Ms. BROWNER. Right. We agree with that.

Senator KEMPTHORNE. OK.

Now, source water protection—this is something that previously has not been in the Safe Drinking Water Act. I happen to believe that it makes sense, that if you can avoid some contamination upstream, that just helps everybody. We've worked with the agricultural community, a variety of groups, and to their credit, they are supportive of this effort.

But I don't believe that this act ought to be converted into a smaller version of the Clean Water Act. Therefore, we agreed to craft the petition process so that it will focus resources on problems or near-problems.

I believe that this will prevent contamination at levels of public health concern and will allow community water systems to avoid treatment that might otherwise be necessary.

Why do you believe that this approach will not work to accomplish prevention, particularly since other avenues are available to States and local governments to focus on the protection of pristine waters?

Ms. BROWNER. Mr. Chairman, let me begin by congratulating you for what you have achieved in source water protection. It is indeed a step forward, and I know it was not easy. You make reference to some of the stakeholders; there were many people with an interest in this issue, and we really do applaud your efforts for securing this provision.

As you well know, from the beginning of this debate 3 years ago, I believed that doing something on source water protection in drinking water was common sense. It just made common sense. The concerns we have are really twofold, and these would be further improvements to what you have already achieved.

The petition process as structured, we think, could be more flexible, that it could give States and communities greater flexibility. Equally important, as I said in my opening statement, is the ability for States and communities not just to focus on existing problems, but on future risks. And I know that is a difficult issue, but I think if you're going to have a legitimate source water protection program, if you're really going to achieve all of the benefits that can be derived from the source water protection program, then you must look not just at the existing, but also the future risks. You need to be able to take into account what's going to happen.

Senator KEMPTHORNE. The interesting thing is that I have come at this bill from a perspective of allowing greater State flexibility and local flexibility, streamlining the process, and your testimony on the previous question and on this question says that we need to allow greater flexibility in the streamlining of the process.

That's interesting, because I think so many times our citizens feel it's the Federal Government that has been an impediment to flexibility.

So I want to take you up on your offer. If we can find greater ways of flexibility and streamlining, let's do it, knowing we will not in any way jeopardize public health.

Ms. BROWNER. Absolutely.

Senator KEMPTHORNE. All right.

Any final questions, then, of Administrator Browner?

[No response.]

Ms. BROWNER. Mr. Chairman, if I might, my very diligent and observant colleagues suggest to me that I was not as precise in my arsenic answer as I might have been, vis-a-vis cancer, so if I might just correct or elaborate on my answer.

The issue on the cancer end points in terms of the science is developed. The question is, at what level of exposure do the impacts occur? That's what's been difficult, I think, and that is where the science is still emerging. But I think I may have suggested inadvertently that science hasn't demonstrated a cancer effect from arsenic, and I would not have intended to suggest that.

Senator KEMPTHORNE. OK.

Ms. BROWNER. I thank you for the opportunity to be here.

Senator KEMPTHORNE. Well, thank you very much.

I will ask one final question.

Ms. BROWNER. OK.

Senator KEMPTHORNE. In light of the fact that we have public officials coming forward—Governors and a Mayor—I believe that one of the significant improvements that we made to this bill over current law is to provide States with the flexibility to tailor Federal requirements where they are inappropriate for local circumstances.

Now, in the course of our discussions, Senator Chafee and I agreed to accept changes to our earlier draft—some changes—that would allow EPA an up-front opportunity to disapprove State alternative monitoring programs.

What steps can you take to assure us that in this and other provisions of the bill, where we intend that States receive new and flexible authority, that EPA and its regional offices will not persist in micromanaging the States? So this is along the theme that you just laid out. Would you address that?

Ms. BROWNER. As someone who ran a large State environmental agency, I have the utmost respect for the quality of the work that the State agencies can do. In terms of the drinking water program of this country, there is no doubt in my mind that on a day-to-day basis, the States and the local government are the ones who need to be running this program. They have the tools, they have the experience that we can never hope to have in each community.

I think the bill that you have put forward strikes the appropriate balance. It recognizes what a Federal program can do and do well, and it recognizes what State and local governments can do and do well, and it allows us to work together in a number of very important areas—for example, the contaminant selection process. It is vital that there be a partnership between the State and the Federal Government.

You have my personal commitment that we are not going to be involved in the micromanagement of these programs as the States and local governments assume the authority that you have given them. Our responsibility is to look across the entire country, to ensure that tough standards, standards that clearly protect the public health, are being set, and that the law is being complied with. That is where we will focus our energies.

Senator KEMPTHORNE. All right.

Well, Madam Administrator, I appreciate very much your thoughts and your input this morning and your help on this bill.

Ms. BROWNER. Thank you, Mr. Chairman.

Senator KEMPTHORNE. Thank you.

Then let me invite our next panel to please come forward.

It is a personal pleasure to welcome all the participants of this next panel. Let me introduce the Honorable E. Benjamin Nelson, Governor of the State of Nebraska, who is here for the National Governors Association; and the Honorable George Voinovich of Ohio, who is also here on behalf of the National Governors Association. And I would note that with these two Governors, who I consider not only partners in many of these issues but friends as well, I want to thank you for your assistance in our efforts to curtail unfunded Federal mandates, both of you playing leadership roles in that. I appreciate it greatly, and I look forward to your comments this morning.

Also, the Honorable Jeffrey Wennberg, Mayor of Rutland, VT, who is here on behalf of the National League of Cities. Again, Mr. Mayor, as a mayor before I came to this institution, I think there are so many of these issues where if we can deal with them from that local perspective, where we are on call 24 hours at the local level, that it enhances us. I particularly enjoyed your testimony that you had submitted earlier.

With that, let me call upon Governor Nelson.

STATEMENT OF HON. E. BENJAMIN NELSON, GOVERNOR OF THE STATE OF NEBRASKA, REPRESENTING THE NATIONAL GOVERNORS ASSOCIATION

Governor NELSON. Thank you very much, Senator Kempthorne and members of the committee. I am Ben Nelson, Governor of the State of Nebraska, and being here today with Governor Voinovich from Ohio is a real pleasure. We appear here today on behalf of the National Governors Association.

We have already submitted a full statement for the record, but each of us will, with your permission, summarize a number of key points that we think are important with respect to this bill.

As we are sure that everyone knows, for the past 2 years the National Governors Association has made reform of the Safe Drinking Water Act one of our highest priorities. It is a great pleasure to appear here today to testify on this bipartisan drinking water reform bill, which was recently introduced by members of this committee and others.

Before I speak to the bill itself, though, I want to acknowledge the extraordinary role played by several individuals in the development of this legislation. First, we want to salute you, Senator Kempthorne, for your interest, and of course, Senator Chafee and Senator Baucus as the chair and the ranking member of this committee. It has been extremely important that the role that has been played has resulted in a bipartisan effort to develop this bill, and we want to thank you for the many——

Senator REID. Mr. Chairman, if I could interrupt the Governor, I think one person we have to throw accolades to is the Senator from the State of Nebraska, Bob Kerrey. He drove me crazy on this legislation.

[Laughter.]

Governor NELSON. I am very happy to include Senator Kerrey. His office and our offices have worked closely on this legislation, and it has been a real pleasure to work with people who are enlightened about the importance of this measure to rural areas, as well as America as a whole. We couldn't have done this without all this support. My good friend, Bob Kerrey, has been a very stalwart part of this effort, and I want to acknowledge his effort, as well.

We know that a number of staff have also been very diligent in their efforts, as well. With the risk of missing someone, I won't begin to identify all of them, but we do particularly appreciate the work that they have done with the staff of the National Governors Association, as well as our own staffs.

It is important to emphasize that as we have worked together to develop amendments to this Safe Drinking Water Act, our guiding principle has always been and must continue to be to provide for the protection of public health. With respect to the bill itself, I would like to make just a couple of points.

The first is that the Safe Drinking Water Act is broken as it currently exists, and needs to be fixed. I think almost everyone would agree; the State and local officials agree, and Administrator Browner agrees, that certain things need to be done to perfect it. We are all in agreement that one of the problems with the current law is the requirement for EPA to regulate 25 new contaminants every 3 years, regardless of whether or not they actually occur in the drinking water. This bill repeals that provision, and in its place EPA is required to regulate whatever occurs in the water at levels of health concern, whether that is one contaminant or one hundred. It simply makes sense to do it that way, and we truly support the approach that is taken in the bill to do that.

As a point of reference, I would note that Nebraska has met its responsibilities for the protection of public health by implementing every drinking water standard adopted by the EPA, but our experience tells us that we generally have concern for less than 20 contaminants of the 81 for which standards have been adopted by EPA, because the others simply don't commonly occur in our water. So we are fortunate, and we recognize that.

Another huge improvement over the current law is ensuring that decisions are based on adequate data and peer-reviewed science in directing the EPA to establish priorities for the development of new standards based upon the potential public health effects. In the past, this program has been driven more by environmental lawsuits in the Federal courts than by scientific considerations. Requiring the EPA to also consult with the Centers for Disease Control is a very positive and important change. But we would like to go one step beyond that and require that the EPA actually respond in writing to comments made by the CDC, as well as other Health and Human Services agencies, before it actually proceeds with any rulemaking.

As far as standard-setting is concerned, we think that the current law can impose very large costs on our communities without corresponding benefits. As an example, consider the upcoming rulemaking for disinfectants and disinfection byproducts. The EPA's negotiation committee on this has estimated that using the current

standard-setting process could require EPA to set a standard with nationwide compliance costs as high as $60 billion to $70 billion. In Nebraska our share of that could easily run into hundreds of millions of dollars. Unfortunately, the benefits of such a standard are unknown. It's a lot of money, without knowing what the result or the requirement should be.

I want to be emphatic about this. We simply can't afford anywhere to spend money—let alone hundreds of millions of dollars—without a sense of what we'll get in return, what we're buying with that money. The people have a right to know when they're getting their money's worth, and when there's a general feeling that their money's worth is not being received because you don't know in advance what's going to be done or why it's going to be done, then, of course, you get a lot of public dissent.

We would prefer to see this bill go forward as it is, as it has been amended. We would hope that we could work with you to see that that is accomplished. In the hope of having enough time for everybody to testify today and be heard, I would confine my comments to what I have just said, and I obviously would be happy to defer to my good colleague, the Governor of Ohio.

Senator KEMPTHORNE. All right, Governor Nelson, thank you very much.

Senator BOXER. Mr. Chairman, because I have to leave, I would just like again to thank you and the Governors. I just need to explain because I hate to walk out in the middle of something that I care about.

The hospitals in California that were damaged in the earthquake have been working with James Lee Witt to figure out a solution, and I have to go to that meeting. I just want to say to everybody, let's continue our good work.

Senator KEMPTHORNE. I will submit some questions by Senator Bond to the State officials to be answered for the record.

[The questions and the answers thereto follow:]

QUESTIONS FOR THE HONORABLE E. BENJAMIN NELSON, GOVERNOR, STATE OF NEBRASKA, AND HON. GEORGE VOINOVICH, GOVERNOR OF THE STATE OF OHIO

1. In reorganizing the EPA, some have mentioned that the EPA's regional offices should be further decentralized with EPA personnel housed in State environmental agencies to provide an improved Federal/State partnership and a better understanding of States' needs and priorities. In your opinion, do you believe that this could provide improvements to the current structure? What other suggestions do you have for reorganizing the EPA?

2. If the Congress can only appropriate $500 million for a Drinking Water State Revolving Fund, are the proposed set asides out of this fund still top priority?

3. The Senate appropriation bill for EPA provides that 40 percent of the EPA's budget goes to the States for their program and infrastructure assistance programs. For instance, $1.5 billion of the total $2.34 billion for this account is for State Revolving Funds. Five hundred million out of the $1.5 billion is held in reserve for drinking water pending authorization. What would be your recommendation for how this account should be structured? What would be your breakdown of priorities?

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E. Benjamin Nelson
Governor

November 17, 1995

The Honorable John H. Chafee
Chairman, Senate Environment &
Public Works Committee
505 Senate Dirksen Office Building
Washington, DC 20510

Dear Senator Chafee:

I sincerely appreciate the opportunity you extended to me to provide testimony on the Safe Drinking Water Act. With your leadership, I believe that much progress has been made and I am optimistic that we are all headed in the right direction.

The following are responses to the questions submitted by Senator Christopher S. Bond and transmitted to me. The responses are provided in the same order in which the questions were presented.

QUESTION 1. Over the past 20-plus years much has been accomplished in the field of environmental and public health protection with the leadership provided by the Environmental Protection Agency. However, as states have become more mature and as we have evolved to the point where most of the problems are essentially state and local problems, I am convinced that the state/federal partnership can be significantly improved through a modified regulatory program as well as institutional structure in which most decision-making and human resources move from the national and regional offices to the states.

We have followed with tremendous interest the analysis done by the National Academy of Public Administration and believe that that analysis and the resulting recommendations regarding the role and structure of EPA represents a common sense approach to improving EPA's delivery of services. I would encourage you to carefully consider the recommendations of NAPA as you consider any proposed changes to the Environmental Protection Agency.

QUESTION 2. As we have noted on numerous occasions, a State Revolving Fund for drinking water is an extremely important element of our ability to assure safe drinking water, particularly in the rural areas of this country. We sincerely appreciate your support of the drinking water State Revolving

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Fund. I would like to refer to several set-asides that I would identify as high priorities.

We believe it is essential that adequate health effects research be conducted in order for us to know that we have identified the appropriate contaminants which must be regulated in order to protect the public health. We must be assured that we have adequate data and information with which to appropriately set standards. Therefore, I believe that the health effects research set-aside should be a top priority.

I also believe that the greatest potential for improving the quality of the drinking water in the country rests on our ability to address the significant problems that our small communities face. The SRF fund will provide assistance in the construction arena. However, it is essential that we have resources with which to provide technical assistance to those small communities. However, as I understand it, this money may only be utilized to provide technical assistance to small communities if the appropriation for the SRF exceeds $800 million. Therefore, at the $500-million appropriation level, we would be precluded from providing what may be the most valuable part of the equation. I would, therefore, suggest to you that this limitation be removed.

Within the State Revolving Fund Program there is also an ability to utilize the funds to provide loans for source water protection. In many circumstances, protection of the source water may be the most cost effective use of those loan funds. Therefore, I would endorse this set-aside as an important element.

Finally, as you well know, there are numerous new responsibilities for the state to assume in the administration of the Safe Drinking Water Act. State budgets as well as the federal budget are strained to the breaking point and states must have new resources for new responsibilities. Therefore, I endorse the provision which allows states to use a portion of the State Revolving Fund to augment the state implemention of the Safe Drinking Water Act.

QUESTION 3. First, let me provide support for the provision in the Appropriations Bill which specifies that 40% of EPA's budget goes to the states for their programs and infrastructure assistance programs. While we believe there is a very real need for a strong federal environmental protection program, it is our belief that the program implementation, the assistance, and the environmental and public health protection actually occurs at the state and local level. As we all attempt to enhance the effectiveness of these programs, we must assure that resources going to actual implementation are not reduced.

As I understand the provisions of the Senate Appropriations Bill, of the $2.3 billion for this account, $1.5 billion is designated for a combined State Revolving Loan Program to address

both the Clean Water Act and the Safe Drinking Water Act, $675 million is designated in total for all of the state environmental grants with the remainder being designated for border and Alaska native village activities.

I believe that this allocation represents a reasonable structure of the account. However, it is important to note that within the $1.5 billion State Revolving Fund account, it is essential that the language allowing the states to move monies back and forth between the Clean Water Act and the Safe Drinking Water Act sub-accounts be retained. That flexibility has been important as governors have discussed the need to be able to address the most critical problems in a given state.

Once again, I appreciate the opportunity to provide my thoughts to the Committee and to provide answers to these questions, and please feel free to call upon me if you have further questions.

Sincerely,

E. Benjamin Nelson
Governor

EBN:hs

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GEORGE V. VOINOVICH
GOVERNOR

STATE OF OHIO
OFFICE OF THE GOVERNOR
COLUMBUS 43266-0601

November 29, 1995

The Honorable John H. Chafee
Chairman
Committee on Environmental and Public Works
United States Senate
Dirksen Senate Office Building Room 567
Washington, D.C. 20510-6175

Dear Chairman Chafee:

Thank you for your letter of November 8th asking me to respond to several questions from Senator Christopher Bond.

#1) Senator Bond's first question dealt with reorganization of the U.S. EPA Specifically, Senator Bond wanted to know if I felt EPA's regional offices should be further decentralized by housing EPA personnel in state environmental agencies. While I believe some reorganization is in order, I am reluctant to support such a proposal. Placing federal employees within state environmental agencies could be problematic for several reasons. Such a system could lead to new federal intrusion in state issues which currently have no federal involvement. We don't need to add a layer of federal employees to the mix of state and local government employees already delivering environmental services to our citizens. Unless federal employees reported to and followed the agenda of the state environmental directors, employee oversight and management could also be problematic.

Instead of housing federal employees in state agencies, I suggest Congress focus on changing the mission of the U.S. EPA. Ohio's environmental program managers are seasoned environmental professionals who have the expertise and experience to solve environmental problems in our state without undue federal oversight. U.S. EPA should maintain a federal role of coordinating among the states and managing environmental issues of truly national or international concerns. U.S. EPA should also have strong research, technology and economic assessment programs which can provide the scientific information to support environmental policy decisions. Regional Offices should be adequately staffed to coordinate interstate air and water issues and to support states in carrying out state environmental agendas

#2) In response to Senator Bond's question: "If Congress can only appropriate $500 million for a drinking water state revolving fund, are the proposed set asides out of this fund still a top priority?" Every effort should be made to funnel available dollars to infrastructure improvements, especially for medium and small-sized communities. However the set asides for health effects research, technical assistance and monitoring assistance are also important. Overall it is critical Governors be given the flexibility to allocate dollars to the specific needs of their states and communities.

#3) Senator Bond's final question focused on priorities and structure for the state revolving fund given the outcome of the Senate appropriations bill. I highly recommend states be given flexibility to transfer finds between safe drinking and clean water SRF's based on individual state priorities. The current language in the Kempthorne bill which would allow up to 50 percent of funds to be transferred between SRF's is appropriate. Priorities should be established atter a needs analysis is completed. While such analyses have been completed in the past for wastewater priorities, U.S. EPA is currently developing the first such analysis for drinking water needs.

I hope this letter provides sufficient answers for your committee. Please do not hesitate to contact me if you have any questions or need additional information.

Sincerely,

George V. Voinovich
Governor

Senator KEMPTHORNE. Senator Boxer, I appreciate that.

I think she really expresses the concern of so many Senators that would like to be here, but there are so many different issues going right now that we are pulled in a variety of directions.

With that, Governor Voinovich?

STATEMENT OF HON. GEORGE V. VOINOVICH, GOVERNOR OF THE STATE OF OHIO, ON BEHALF OF THE NATIONAL GOVERNORS ASSOCIATION

Governor VOINOVICH. Thank you, Mr. Chairman, members of the committee.

First of all, Governor Nelson has done a good job of recognizing the people that are responsible for our being here today. I would like to say, though, Senator Kempthorne, that without your bulldog determination—the same type that you had on the mandates bill—we wouldn't be here today.

Senator KEMPTHORNE. Thank you very much.

Governor VOINOVICH. I think I should also pay recognition to the fact that Senator Chafee has been willing to work with you and the Democratic members of the committee to come up with a compromise bill, and I am very pleased with that. It has been a very good bipartisan effort.

I would also like to point out that those of us in State and local governments have a deep commitment to environmental protection and to clean water. I try to remind people that I was the father of the Ohio Environmental Protection Agency, wrote all the amendments to Ohio's air pollution laws, was mayor of the city of Cleveland, helped clean up Lake Erie and win the "battle of Lake Erie," increased water rates when I was mayor by 300 percent, and as Governor have increased the spending on the EPA by 60 percent, most of it being paid for by the polluters. So we are committed to a clean environment and clean water.

I think that our challenge, though, is to determine how to best protect the environment and the health of our citizens, using limited resources. We need to do a better job of setting environmental priorities and spending our resources wisely. That's really what this is about. I have a saying in Ohio that we have to work harder and smarter, and do more with less. We have to provide a good quality product for the least amount of money.

I'm not going to get into the cost to local governments, but just in a nutshell, right now local governments are spending $0.12 out of every $1.00 for unfunded mandates. By 1998, it's going to be $0.25 out of every $1.00 that they spend. This legislation, in my opinion, is going to help relieve some of the prospective future problems that cities are going to have.

Governor Nelson and I sat in on a meeting early this year and talked with members of the State and local government coalition, and that group is made up of the Governors, the county commissioners, the State legislators, and the two mayors' groups. We are here today in unity on this legislation on a bipartisan basis. If you don't remember anything else that I say today, members of the committee, we are together on this issue. We are strongly committed to this legislation. We think that it's a good piece of legislation. We think that it gets at the problems with which we have been

confronted. I know that earlier this year I met with Carol Browner and complained to her about these 25 new contaminants every 3 years and how it didn't make any sense. She said, "Gee, I'd like to help you, but my hands are tied because the law says that I have no flexibility here."

So I'm not going to get into all of the details here. All I can say is that we are happy with this legislation and we want to make very clear to the members of this committee that we feel that we have compromised on this legislation. Senator, you know where we stood on many of these issues. I must tell you that it's not exactly what we want in all these areas, but we feel that you've concentrated on those things that will make the most difference to give us the flexibility to get the job done on the local level, spend our money where we're going to get the biggest return on our investment, and do a much, much better job of helping to protect our water supply, particularly for our small communities. You know, 90 percent of the communities in Ohio are small, less than 10,000. The current law is really preventing them from using their initiative and working with us to really get at the problems they have.

We believe that this legislation will allow us to do that, so that the final result for America is that we will have safer drinking water throughout the United States of America, and that's really what we're here to do. We appreciate the fact that you understand that for us to do that, we need to be your partners. We want you to know that we'll get the job done for you.

Senator KEMPTHORNE. Good. Great comments. I appreciate that from both of our Governors.

Mr. Mayor.

STATEMENT OF HON. JEFFREY WENNBERG, MAYOR, RUTLAND, VT, ON BEHALF OF THE NATIONAL LEAGUE OF CITIES AND THE NATIONAL ASSOCIATION OF COUNTIES

Mayor WENNBERG. Thank you, members of the committee. I am Jeff Wennberg. I am the mayor of Rutland, VT, and the immediate past chair of the National League of Cities' Committee on Energy, Environment, and Natural Resources.

It is an honor for me to testify on behalf of the National League of Cities and the National Association of Counties and our 19,000 members.

There is no public health responsibility of greater concern to local elected officials than the provision of consistently safe, plentiful, and affordable drinking water. This is the only product or service that we provide that directly affects the health and well-being of every one of our constituents every day. Unfortunately, the Safe Drinking Water Act, as amended in 1986, has often confounded our efforts to meet this responsibility.

This centralized, arbitrary, command-and-control Federal intrusion has served the interests of Washington-based bureaucracies and environmental special interests. It has, however, inadequately served the local, State, and national interest in protecting the public health.

I need only remind the committee that it was under the current law that an unregulated parasite paralyzed Milwaukee in 1993. It is therefore my great pleasure to offer the wholehearted support of

the National League of Cities and the National Association of Counties for the Safe Drinking Water Act Amendments of 1995.

The environmental special interests have made a great investment within the Beltway. Their ability to pursue their agenda, which is in most cases admirable, has historically depended upon their access to decisions made here and in the national regulatory bureaucracies. Any effort to grant more discretion to the States and localities is seen as an attack on their ability to influence those decisions. Unfortunately, if we fail to grant more authority and flexibility back to the States, and if we fail to prioritize the risks themselves, we will ultimately fail to protect the public health.

There are two critical revisions in your amendments: the process by which new contaminants are selected, and the process by which limits on those contaminants are set. Under current law, regulated contaminants are chosen by a process that makes about as much sense as selecting Nobel laureates with an MTV 1–900 poll. Your proposal to select contaminants on the basis of known health effects and proven presence in drinking water will ensure that the public's resources are not squandered in looking for phantoms in the water.

Proponents of the status quo will argue that the standard-setting provision guts the law, that when it comes to the safety of our drinking water, cost must not be an issue. As an elected official, I realize the peril associated with challenging this premise. Nonetheless, if this assertion were true, we wouldn't be here. If the cost of providing perfectly risk-free water were not an issue, then the Federal Government would simply budget 100 percent of all the funds necessary and achieve it. You have not done so, nor have the States, nor have the localities. And we have not done so because there is, in fact, a very real limit on what the American people can and will spend on risk-free water, assuming that such a thing is even possible.

If we are to accept the responsibility to do the very best job possible, with limited resources, we must reject the notion that any expense is justified. We must direct our first resources against the greatest threat to public health, and then the next to the second greatest threat, and so on. And the only way that this can be done is to choose contaminants and set standards on the basis of health risk and cost. To do otherwise is to risk squandering resources on relatively low priorities, while very real threats go unaddressed.

Throughout the amendments you have recognized that needs, resources, and priorities vary from system to system and State to State. For example, small systems often lack the technical expertise and financial capacity to comply. The 1995 proposed amendments recognize the realities faced by small systems with set-aside funding for technical assistance, improved variance powers, and research on new technologies.

We've already heard objections to some of these provisions, but in Vermont this is a huge issue with no simple answer. For example, I know of a fire district serving 30 households that has been on continuous "boil water" for 15 years. If we simply mandated compliance and prosecuted those who failed to comply, the lawyers would be kept busy, but the water would still be undrinkable.

Only with the reestablishment of a working partnership between the Federal and State and local governments will we have any hope of ensuring that all water is safe to drink everywhere.

We applaud your recognition of the need for financial assistance through the creation of the State revolving funds. We are especially pleased that the bill addresses the needs of distressed communities, regardless of size. NLC and NAC strongly support the SRF funding setasides, especially funding for State programs, source water protection, and small systems.

The Safe Drinking Water Act Amendments of 1995 will fix a broken law. As the elected official who is held most responsible for the safety of the water that my constituents drink, I urge you to reject the arguments issued by the defenders of the status quo. The Safe Drinking Water Act Amendments of 1995 will result in cleaner, safer drinking water.

I want to thank the committee for your excellent work on this bill and for providing this opportunity to encourage its passage, and special thanks to the bipartisan efforts of Senator Kempthorne and Senator Chafee, my fellow New Englander. Thank you so much for your leadership.

[Responses to additional questions by Senator Bond follow:]

QUESTIONS FOR THE HONORABLE JEFFREY WENNBERG, NATIONAL LEAGUE OF CITIES, SUBMITTED BY SENATOR CHRISTOPHER S. BOND

1. In reorganizing the EPA, some have mentioned that the EPA's regional offices should be further decentralized with EPA personnel housed in State environmental agencies to provide an improved Federal/State partnership and a better understanding of States' needs and priorities. In your opinion, do you believe that this could provide improvements to the current structure? What other suggestions do you have for reorganizing the EPA?

2. If the Congress can only appropriate $500 million for a Drinking Water State Revolving Fund, are the proposed set asides out of this fund still top priority?

3. The Senate appropriation bill for EPA provides that 40 percent of the EPA's budget goes to the States for their program and infrastructure assistance programs. For instance, $1.5 billion of the total $2.34 billion for this account is for State Revolving Funds. Five hundred million dollars out of the $1.5 billion is held in reserve for drinking water pending authorization. What would be your recommendation for how this account should be structured? What would be your breakdown of priorities?

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November 17, 1995

Hon. John H. Chafee, Chairman
Committee on Environment and Public Works
United States Senate
Washington, D.C. 20510-6175

Dear Senator Chafee:

Thank you for passing along Senator Bond's questions. My answers are as follows:

Question 1: While we certainly support an improved partnership between federal and state governments, local governments are understandably wary of such a "intimate" linkage between federal and state bureaucrats. In some states the new relationship may facilitate compliance or permitting activities, but in others it might do the reverse.

For example, Vermont has adopted wastewater treatment plant sludge disposal rules that liken sludge to hazardous waste. We have been able to argue that EPA's much more reasonable rules should be followed. Would linking the two regulators make Vermont more reasonable or EPA more extreme?

If such a revised relationship between the state and federal governments were to be implemented, where in this new arrangement does local government fit? This question must be answered before implementing any change, because it is the local governments that are charged with the final task of implementing and financing these environmental investments.

Question 2: The National League of Cities was the first organization to suggest set asides when the Administrator first proposed a drinking water SRF. We believe that the purposes of the set asides -- health effects research, technology development and enhanced state administration (which will result in greater technical assistance to suppliers that are having difficulty with the law) -- will yield far greater benefits for the producers and consumers of drinking water than government loans.

Question 3: We believe that full funding for state and local programs should be the priority in the appropriations measure. While we are not enamored of loan programs, they represent the only contribution the federal government makes to assist individual operators with federal mandate compliance. The appropriations should therefore be a priority concern.

With respect to the reserve for the drinking water program, we are optimistic that amendments to the drinking water law will be completed in this Congress. We are less optimistic that this will occur by the April 30, 1996 cut off date in H.R. 2099. We therefore advocate that the funds be reserved until the end of the fiscal year.

Our priorities with respect to Clean Water were not addressed in the Senate Appropriations bill. Our major concern lies with the stormwater management program. We concede that the House version may be overly broad, but we are very disappointed that the Senate did not contain a similar

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prohibition -- at least for municipalities -- until this misguided program is fixed. The nation's large municipalities are currently in the untenable position of having to accomplish something no one knows how to do. Smaller communities are operating under a moratorium of dubious legality unilaterally imposed by EPA. Our top priority is to stop this costly program until a workable amendment can be enacted.

Thank you again for granting me the opportunity to offer testimony to the Committee. Please let me know if I can ever be of further assistance.

Sincerely,

Jeff Wennberg
Mayor of Rutland

cc: Carol Kocheisen, NLC

j

Senator KEMPTHORNE. Mayor Wennberg, thank you very much.

I will note, based on what you said there, that this will be the first time that we have authorized the funds for the State revolving loan fund. Ironically, there have been appropriations in the past, but not the authorizing mechanisms, so that will now provide funds so that we can put our money where we said we'd put it.

So with that, let me ask a few questions here. Really, I would direct this to all three distinguished members of the panel.

Do you believe that incorporating benefit cost and risk assessment as a basis for setting standards for drinking water contaminants will jeopardize public health? Or will we get better public health protection?

Governor Voinovich, if you would lead off?

Governor VOINOVICH. There is no question. I refer to this act as "the common sense amendments to the Safe Drinking Water Act." One needs to look at cost benefits and good science when you're putting standards in place, and I think that rather than diminishing what's been happening, it will increase what we are doing because we will be able to concentrate our efforts on those things that have proven to be a problem, or are likely to be a problem, rather than just arbitrarily coming down every 3 years with these 25 new contaminants, with no consideration as to whether they exist and what the cost would be to try to detect those contaminants.

For example, in Ohio we are charged with looking after 43 chemicals, most of them for pesticides. We ascertained from scientific data that there's only 9 of them that are really used in Ohio to the extent that you can detect them through the science that is available, but yet we are concentrating on some of these other areas, where we would be much better off concentrating on those and maybe looking at some that might be around that might have the possibility of doing something to our water.

Senator KEMPTHORNE. All right, Governor, thank you very much.

Governor Nelson.

Governor NELSON. Yes. Thank you.

Any time you establish a prioritization of what your greatest risks are, and then you begin to address how you deal with them and to what level you need to reduce them for good health purposes as opposed to what's possible with scientific methods and reductions, I think you're going to have better health. You're simply going to be able to have better water because you're not going to be testing and wasting your time and money and resources on those areas where there isn't a problem. It's directing the resources toward the greatest risk, the second greatest risk, as the mayor testified, and being able to make certain that you're doing things to the level of what's required for good health as opposed to checking through a laundry list to check whether or not you've tested for things that have never been present in your water.

I think it just makes good common sense, as Governor Voinovich said.

Senator KEMPTHORNE. All right, Governor Nelson, thank you.

Mayor Wennberg.

Mayor WENNBERG. Well, I think I hit that philosophy pretty well in my remarks. I would just add an example to that.

More than simply allowing or enabling the Federal, State, and local governments to do a better job of protecting the public health—which will clearly be the result—it will also enable, I believe, people at the local level to better connect the expenditures that they are being requested to make with the benefits that they are expected to derive from those expenditures. For example, in the last 6 years water rates in my community—and I've been mayor through this whole period—have increased 230 percent. And they increased 230 percent not solely because the Federal Government provided some leadership through this law, but also because the people of my community willingly, and by a large margin, voted the bond issue necessary to increase the protection of public health in our water system, our water treatment system.

If we're going to expect to improve substantially in our small communities with their multimillion dollar bond issues, we're going to have to show them—and the responsibility ultimately falls to folks in my position—to show them that the benefits that they are going to derive from those increased costs are justified by connecting and prioritizing the standard-setting; and then what comes from that, of course, the treatment requirements that flow down. By connecting those with health benefits, we enable the people at the local level to make those connections as well and encourage greater local support.

Senator KEMPTHORNE. All right.

Governor VOINOVICH. I was just going to add that in my State, we are about finished with a comparative risk analysis in the environmental area to determine those items that really are causing us problems, so that we can take our finite resources and direct them and focus them on those things that really make a difference. I think that's the environment that we're in on the Federal level, State level, and local level. The sooner we get to really focus on the things that are causing the problems, and good science and cost benefit, the better we'll be able to really make a difference in terms of improving our environmental situation.

Senator KEMPTHORNE. All right, thank you very much.

My time has expired. In turning to Senator Reid, let me just note that he is the ranking member of the subcommittee that dealt with this.

Senator Reid, I appreciate the partnership that we've had.

Senator REID. Thank you, Mr. Chairman.

Gentlemen, I stayed because I want you to know how much I appreciate your being here today. If we're going to make this legislation become a reality, we're going to have to continue working on it. There are all kinds of very partisan things we are doing on the floor and will continue to do, and it is important that we see the end of the road on this legislation and work together to get it passed.

You heard the chairman say that in the past we've had the appropriation but not the authorization. I'm afraid that the role may be reversed. We may get the authorization and not the appropriation. We are ratcheted down so much—I'm a member of the Appropriations Committee—that we're going to have a lot of trouble finding the billion dollars that this legislation calls for. The legislation will be a total failure if we don't get the money to go with the legis-

lation. In the State of Nevada, even though about 90 percent of the people live in Las Vegas and Reno, the urban areas, most of the State is composed of rural Nevada, hundreds of small water systems that can't possibly meet these standards unless we get them some financial assistance.

So I am really glad that you are here. I appreciate your taking your time from your busy schedules and acknowledging your support on a bipartisan basis for this legislation.

Other than that, all I can say is that one of the greatest football games—if not the greatest—that I ever watched was last year, when Nebraska won that. You know, I've been a Cleveland Indian fan since——

[Laughter.]

Senator REID [continuing]. Since I was a little boy living in rural Nevada, and all we had was the "Game of the Day." You listened to it, and my favorite team then and now is the Cleveland Indians. I can give you—I won't take the time now, or I might even take the time——

[Laughter.]

Senator REID [continuing]. I can give you the lineup of the 1948 Cleveland Indians. I won't take the time, but I could do it if I had to.

Senator SMITH. How many of those games did you witness?

Senator REID. I witnessed them all in my mind's eye. I listened to those games religiously every day; that was the biggest event of my life, being able to listen to the baseball game, there in Searchlight, NV.

And for Vermont, I've never been there.

[Laughter.]

Senator KEMPTHORNE. But he loves your maple syrup.

[Laughter.]

Senator REID. And I love your two Senators.

Thank you very much, Mr. Chairman.

Senator KEMPTHORNE. Senator Reid, thank you very much.

Senator REID. I can't emphasize enough—you know, Bob Kerrey can be a real nuisance, and he literally was so interested in this legislation, and he told me that one of his main interests was because you were bothering him about as much as he was bothering me on this legislation.

I mentioned this when we introduced the bill: if there were a reason that I cosponsored this legislation, I couldn't put up with Kerrey much longer.

[Laughter.]

Senator REID. So he was really tenacious in support of this legislation.

Thank you, Mr. Chairman.

Senator KEMPTHORNE. Senator Reid, thank you very much.

Governor Nelson, I don't believe you were here for the opening comments, but I certainly noted the role that Senator Kerrey played, a significant role, and I really think we can credit him with the influence that made it a bipartisan effort. So I appreciate that.

Senator Smith.

Senator SMITH. Thank you, Mr. Chairman.

Since there is nobody from Georgia here, I can say, Governor, that I am rooting for the Indians as well.

[Laughter.]

Senator SMITH. I notice you haven't mentioned New Hampshire. We're right across the river, Mr. Mayor, but I'll forgive you for that.

In 1954, you will remember that World Series. At that time I was a New York Giants fan, believe it or not. Four straight——

Governor VOINOVICH. I can't forget it.

[Laughter.]

Senator SMITH. I think it's going to be different this year.

Governor VOINOVICH. I hope so.

Senator SMITH. If I could ask each of you to address this. First of all, I want to echo what Senator Reid said in the sense that this really has been a cooperative effort with the Governors and mayors across the country, and both parties, on a number of environmental issues that we've been dealing with, including Superfund. I know, Governor Voinovich, we have corresponded—at least at the staff level—a number of times on that bill, and I am very grateful for your input. All of the Governors and mayors across the country have been very, very helpful in sending information to us and offering suggestions, and vice versa.

One of the criticisms—I don't happen to agree with it, but maybe it will be expressed later on in the hearing today—is that we need more Federal hammer, we need more Federal enforcement, and that's so important because we can't depend on the States and the cities and the towns and communities to enforce these decisions.

I know where you're coming from, but briefly, if you could just respond to that on the record, because in my opinion that has been the problem over the years. We are trying to correct that, and as both you Governors say in your statement—which is a good statement—where you talk about the compliance issue; you know, we drink the water. It's not the EPA officials; we're the ones who drink the water. So the incentive here for us to comply is because of that, not because we need somebody with a hammer over our heads.

Yet there are many who are very aggressive in this who feel that somehow, if we don't have this big Federal hammer hanging over your head, nothing is going to get done.

Let me just ask you two to respond.

Governor NELSON. Well, thank you very much, Senator.

I think there was a time when the State's ability at every level was probably inadequate, compared to where we are today. I think there are some people who are stuck with that recollection of the inability of States to do the kinds of things that the Federal standards that have been set would have required if they had been required back then. That was then; this is now.

As Administrator Browner said, in the case of Florida and her experience with other States, that's no longer the case. She and others have witnessed the States having a greater capacity to deal with the issues, technically as well as legally, and when it comes to the moral commitment to make sure that the water is safe for the consumer, no one has a greater interest than the mayor and the Governor in that regard.

With all due respect, I know that within the Beltway there are those who have a great feeling of interest as well, but no one is closer to it than those of us who are at home. Our ability is stronger to deal with it. Our resolve is there, and I think we've demonstrated and will continue to demonstrate that flexibility will actually result in better water for consumption.

So I think that it's sort of a myth that needs to be debunked, that either the States can't do it or won't do it. In fact, we can, and we are, and we will.

Senator SMITH. Governor Voinovich?

Governor VOINOVICH. I would like to say thank you very much for your help on Superfund. I think it's another example that by working together and looking at some of the practical aspects of that legislation and sharing them with you and the committee, that we've made some real progress.

I think that's really what we're about here. First of all, a lot of us resent the implication that we care less about our people than people here in Washington or "special interest groups" that are out lobbying. We're close to the people. I was a State representative. I was the mayor, and now I'm the Governor. We care; we care dearly about our people, and we are closest to them, and we see the problems much more profoundly than people sitting here and maybe some of those who represent "special interest groups."

In terms of the hammer, the hammer is still going to be there, but the issue is, how do you use it? And what are you going to accomplish with it? What we're arguing here today is that by using common sense, by partnership, by cost benefit, by good science, that we will do a whole lot better job of protecting our water in this country, and by having the flexibility we have the potential to really make a difference.

I am proud that in my State, we lead the country in pollution prevention programs for industries. Most of our major industries have signed up in pollution prevention. We think that's a whole lot better way of doing things than to come in with command-and-control, beat them over the head. These are good people; you've got good people in these small towns. They want safe drinking water. What we have to do is work with them to figure out a way that we can get the job done.

By the way, this legislation also gives the Director of the Environmental Protection Agency of the respective States—at least, it says that they should do this—the power to get in and start to work with some of those local communities that, perhaps for provincial reasons, haven't been willing to work together in terms of coming up with a more enhanced water system. So often they don't have the jurisdiction to raise the dollars that are necessary; but working on a regional basis, for example, there's the possibility of improving things.

So that's what we're talking about here today. Give us the tools so that we can do a better job of protecting our water and improving it.

Senator SMITH. Mayor?

Mayor WENNBERG. Yes, Senator. When there's a problem with the Rutland water—which, knock wood, in the last eight and a half years that I've been in office, there hasn't been—when there's a

problem with Rutland city water, I can assure you the phone rings first on my desk. There is no one in Washington or near Washington that cares more deeply than I do about the quality and the safety of the water that is consumed by the people in Rutland, Vermont. That's the same water that I consume; my children consume it; and everybody who decides whether I have a job consumes that water. So I do take offense sometimes at the suggestion that local officials somehow don't care about such things.

As far as the enforcement thing, quite frankly, it can work the other way. I wish I had a New Hampshire example, but I only have a Vermont example——

Senator SMITH. Well, you may be familiar with Berlin, New Hampshire. Go ahead.

Mayor WENNBERG. Not to the degree that I know this one, so let me present this one briefly.

The Websterville Fire District, 420 customers, in tiny Websterville, VT. As is the case with most very small rural water systems, the people who are responsible for compliance are volunteers. They don't make any money. It's not a job; it's a community service activity. The two gentlemen who were responsible for this for a number of years were a fellow by the name of Jack Mitchell and Gary Brouillette. Under the guise of a routine inspection—this was a few years ago—EPA investigators arrived in the evening and interviewed Mitchell and Brouillette in their homes. They pointed out that there were some inconsistencies with the reports that were filed; they were inaccurate, they were sometimes misleading, and Mitchell and Brouillette freely admitted that there were problems with the reports and that they had misrepresented certain things, and "Thank you, EPA, we need some help in working through this stuff; we're just volunteers." The made no effort and had no intention to hide anything.

Rather than getting the technical support that they thought that they were going to get as a result of these interviews, they were each served with 35 Federal felony counts. The judge, thank goodness—Federal District Judge Franklin Billings—ripped EPA apart for overzealous enforcement, and even used the words "police state tactics" in his comments regarding how these gentlemen were treated.

Ultimately, Mitchell and Brouillette were acquitted of 34 counts, convicted on one count each, and filed $1.00 each for their crimes.

Now, I don't condone what Mitchell and Brouillette did. It was not right; it was unlawful, but I submit that Judge Billings' perception of justice is superior to that of the EPA in this particular instance. The problem is that these tactics and this kind of "big club" thing isn't scaring other local volunteers into compliance. It's scaring them out of responsibility. They're walking away. They're saying, "Wait a minute. I've got a gas station to run," or whatever, "I'm not going to put my life and my well-being at risk for community service if this is the kind of thing that might come down."

What we need is to reestablish that partnership. That's how we're going to get the water clean. This bill gives small communities technical support, financial support, but most importantly it gives the States the flexibility they need to really work with these folks.

Senator SMITH. I think I read it in one of your statements—it may have been in the joint statement that you gentlemen both made—which was that there is an ultimate enforcer, and it's the election, and that the last thing you want to do is go out and say, "I'm proud to say that we've kept your water dirty," whatever. It doesn't work too well. "Drink polluted water and elect me"—I mean, I haven't seen too many slogans like that.

[Laughter.]

Senator SMITH. I just want to ask one final question. It's something that we've been dealing with up here.

If you look back over these various pieces of environmental legislation—let's take the big four, clean water, clean air, Superfund, and safe drinking water—they kind of have evolved in a "rifle bore" type of situation, and in essence you don't really get the opportunity, especially as Governors, to prioritize. If you have a Superfund site, and most have more than one, obviously, and clean water problems or safe drinking problems or clean air problems in your State, you would like to prioritize what might be the worst hazard to the health of your citizens. You really can't do that ultimately because of the fact that we've got four or five major pieces of legislation, all of which you have to comply with in one way or another. We are making attempts to reform that on a piece-by-piece basis.

But what about the approach of having more flexibility in the macro sense to deal with all of these? In other words, in essence, prioritizing clean water, clean air, in terms of the dollars and the resources that you have?

Governor NELSON. If I could address that, Senator, and I'll send the members of the committee a copy of our environmental mandates initiative in Nebraska. We brought together the Environmental Protection Agency at the Federal level on a voluntary basis, as well as the State and local officials, and selected three communities within a county in Nebraska, small communities, all under 1,000; brought together the officials, and created a laundry list of the concerns that the officials had with respect to those communities, based on assumptions and some known information.

We went out to the communities, assuming that wastewater problems would be among the highest, and found that they weren't; even though they were about to be required, in one case, to build a $250,000 renovation of their wastewater treatment plant, which was then determined to be unnecessary, and certainly at this time not a major problem. It was assumed to be a groundwater problem in terms of the drinking water. Upon closer inspection, they found that didn't exist.

When they worked all the way through it, they could create a priority list as to what the communities needed to do to protect their people based on what the risks were rather than what the requirements of the law were. So I think what you're saying is exactly on point, and that is that flexibility, prioritization, and being able to work in partnerships with communities will result in better health, better utilization of dollars, and a happier electorate.

Senator SMITH. I've taken a lot of time. I just want to give one specific example.

I mentioned the town of Berlin in New Hampshire, which has a $30 million or $35 million safe drinking water problem with pipes and contaminants and so forth. Obviously, that's a lot of money for a very small community, just a few thousand people. Yet some of the Superfund sites we have, where we have remedies that are in the millions of dollars, most of the risk experts say, "We don't even have to spend that money. We could spend half of it." And could you imagine if you, the Governors, or the community leaders, had the capability or the option of transferring some of those dollars into the areas of clean water, which is a bigger hazard to health? See, we can't do that if we look at each one of these pieces of legislation one by one, which is what we have to do now, the way we're working.

But I just wanted to make that observation. I appreciate your response, Governor.

Senator CHAFEE [assuming the chair]. Thank you, Governor.

Governor VOINOVICH. That's enlightenment, what you just said, and that's exactly what we're doing in Ohio. Right now we have gone out and we've really looked at what we think are the problems in the State, and now we're getting a lot of citizen input, also, to make sure that everyone has had their day in court when we finally come up with it. But we say that these are the problems that we really need to deal with in terms of the environment, and here are the resources that we have, and we're going to focus our resources to the best of our ability in those areas. If you did that on the Federal level, or at least gave us the option of moving those dollars around, as in a block grant concept, I think that we could do a much more effective job of dealing with some of the specific problems that we have in our State, which may very well be a lot different than, say, Nebraska or New Hampshire or some other State.

I think ultimately that's where we're going to have to go. If you look at what the people are saying about the expenditure of their hard-earned tax dollars, whether it be on the Federal level, county level, State level, the public is ultimately going to insist that we do that.

Senator CHAFEE. Well, thank you very much.

Senator Kempthorne had a comment.

Senator KEMPTHORNE. Just a concluding comment to this panel.

I remember when I arrived here about 3 years ago, I was astounded at how many times I heard Governors, mayors, county commissioners reference those special interest groups, lobbying here in Washington, DC.

I think this piece of legislation is one more step toward affirming that you are partners with the Federal Government. So I feel good about that, and I thank you for your support on this.

Governor NELSON. I fell good about it too, Senator.

Senator CHAFEE. Let me just say a quick word about the statistics here, because it is fascinating to me.

Put it this way: 10 percent of the small systems—let me start over again.

Ninety percent of the water systems in the United States serve fewer than 3,300 people, ninety percent. Despite the large number of small systems, they serve 10 percent of the households; in other

words, 10 percent of the people in the United States are served by 90 percent of the systems.

But the other point I would like to make is that we all believe in the power of the ballot box, and either we shape up or we get thrown out of office. But the trouble is that three-quarters of the systems aren't run by governments; they're run by whoever is running the trailer park, or whatever it is. So there isn't always that accountability at the ballot box that we all believe in.

I'm not sure what the conclusion of all that is——

[Laughter.]

Senator CHAFEE [continuing]. But thank you all very much for coming. We appreciate it, and I know it's been very helpful to us.

Good luck, Governors, in every respect.

What's your prediction, George?

Governor VOINOVICH. Indians in seven.

[Laughter.]

Senator CHAFEE. Could we have the next panel? If the new panel could come up: Mr. Gunter from Kansas City; Mr. Olson from Washington, DC and the NRDC, the Natural Resources Defense Council; Mr. Satchwell, who I know Senator Kempthorne will want to personally greet; Mr. Dan Keil from Conrad, MT—we appreciate your coming this distance; Mr. David Ozonoff from Boston; Dr. Bull from Pacific Northwest Laboratory; and Mr. Mills from Orange County.

Senator Kempthorne, do you have any comments now?

Senator KEMPTHORNE. No, Mr. Chairman.

Senator CHAFEE. All right, why don't we start with Mr. Gurnie Gunter from Kansas City?

STATEMENT OF GURNIE GUNTER, DIRECTOR, KANSAS CITY WATER SERVICES DEPARTMENT, ON BEHALF OF THE ASSOCIATION OF METROPOLITAN WATER AGENCIES

Mr. GUNTER. Mr. Chairman and members of the committee, it is a sincere pleasure to be with you today to present testimony on S. 1316, the Safe Drinking Water Act Amendments of 1995.

My name is Gurnie Gunter and I serve as director of the Kansas City Department of Water Services, which provides drinking water to over 600,000 people. My agency was one of the founders of the Association of Metropolitan Water Agencies, and I am very pleased to be able to present this testimony on the Association's behalf.

I would first like to express AMWA's appreciate for the effort that has gone into bringing the bill to its present point. I would like to commend all the members of the committee who were instrumental in development of the bill, but I particularly want to thank Senator Chafee, Senator Kempthorne, and Senator Baucus.

I would also like to say for the record that the work of your excellent staff has been of a high quality that I have not seen before, and very professional—and particularly Jimmie Powell, Meg Hunt, Buzz Fawcett, and Jo-Ellen Darcy.

Members of the committee, the existing Safe Drinking Water Act needs to be repaired. You have heard that time and time again this morning. Few would disagree that the goal of the 1986 amendments was to protect public health. The regimented approach and

the "more and quicker" focus of the amendments, however, did not serve that purpose well.

S. 1316 significantly improves the current law and increases the likelihood that contaminants of real concern will be addressed.

Everyone's short list of reauthorization goals should include ensuring that drinking water standards address the highest priorities for risk reduction. This seems like common sense, but S. 1316 makes prioritization of risk a part of the act for the first time. It eliminates the requirements for the regulation of 25 contaminants every 3 years and replaces it with a process to identify and study potential contaminants for regulation, which is a very, very positive step forward.

Reauthorization also needs to include a process by which good public policy decisions can be made. S. 1316 does this by providing for use of sound science, by adding flexibility, and by placing before the public all the facts and uncertainties. Sound science, particularly in the health effects area, is based on adequate funding to pursue the needed research. As requirements to regulate drinking water contaminants grew dramatically, EPA's health effects research budget decreased significantly. Despite the quadrupling of the number of contaminants regulated, funding for health effects research dropped continuously from a 1982 level of almost $10 million to this year's all-time low of $1.6 million.

S. 1316 recognizes the urgency of providing more funds for health effects research, and targets $10 million from the State revolving fund for research on disinfectants and disinfection byproducts, Cryptosporidium, arsenic, and sensitive subpopulations. This will ensure that money is available now to address these contaminants and to study their impact on specific segments of the population.

We commend you for this action and would like to work with you in any way that we can to ensure that the funds are made available for this purpose.

S. 1316 takes a cautious but significant step in providing standard-setting flexibility. The bill maintains the present standard-setting process but allows, in certain cases, an alternative standard to be set, considering risk-risk tradeoffs and the costs and benefits to large systems.

It preserves a negotiated agreement on disinfectants and disinfection byproducts, but wisely allows risk-risk tradeoffs to be considered when determining appropriate maximum contaminant levels.

Another important improvement made by S. 1316 is a change in the current law's 18-month effective date for regulations. S. 1316 would allow the Administrator to establish effective dates of up to 3 years on a rule-by-rule basis. Additional extensions of up to 2 years may be granted when capital improvements are involved in compliance. This is a major improvement over current law, and we support the bill's provision.

In summary, the bill goes a long way toward reform of the Safe Drinking Water Act. To your credit, it incorporates a consensus of views, while stepping back from prescriptive formulas and moving forward toward a clearer public health focus and the flexibility to make informed public policy decisions.

Again, Mr. Chairman, I would like to thank you and Senator Kempthorne for your leadership, and express AMWA's gratitude to all the members of the committee for their hard work in this effort.

[Responses by Mr. Gunter to additional questions by Senator Bond follow:]

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December 4, 1995

The Honorable John Chafee, Chairman
Committee on Environment and Public Works
United States Senate
Washington, D. C. 20510

Dear Mr. Chairman:

Thank you for giving me the opportunity in October to testify on the Safe Drinking Water Act and efforts to reauthorize it. Additionally, your dedicated work on behalf of America's drinking water consumers is much appreciated.

In early November you forwarded to me some questions posed by Senator Kit Bond regarding funding for the drinking water program and the SRF. Below I have attempted to answer them.

Question 1: In reorganizing the EPA, some have mentioned that the EPA's regional offices should be further decentralized with EPA personnel housed in State environmental agencies to provide an improved Federal/State partnership and a better understanding of State's needs and priorities. In your opinion, do you believe that this could provide improvements to the current structure? What other suggestions do you have for reorganizing the EPA?

A: At the local level where drinking water regulations are implemented, we deal very little with EPA at either the national or regional level. It is, therefore, difficult to assess how the agency might best be reorganized. I can make some general observations within the context of the drinking water program, however. We do work closely with State drinking water officials on virtually a day-to-day basis. Our joint efforts with the State have a very clear focus on the public health aspects of providing drinking water to consumers. The relationship tends to be one of mutual assistance and trust. Any changes contemplated

contemplated to the State/federal relationship should foster similar attitudes and outcomes. The States are in the position to best understand and appreciate local needs and capabilities, and should be given the maximum flexibility to address those issues.

Question 2: If the Congress can only appropriate $500 million for a drinking water SRF, are the proposed set asides set of the out of this fund still a top priority?

A: Most definitely. An adequately funding SRF and the set asides represent essential parts of the overall effort to provide safe public drinking water. Drinking water health affects research is of particular concern to me. It is a vital area which has for too long been overlooked. Dedicated funding is necessary to avoid both under-regulation and over-regulation due to inadequate knowledge of potential risks, but more importantly to assure that public health is appropriately protected.

Question 3: The Senate appropriations bill for EPA provides that 40% of the EPA's budget goes to the States for their program and infrastructure assistance programs. For instance, $1.5 billion of the total $2.34 billion for this account is for SRFs. $500 billion out of the $1.5 billion is held in reserve for drinking water pending authorization. What would be vour recommendation for how this account should be restructured? What would be your breakdown of priorities?

A: While the subject of funding levels for States is a difficult one for a metropolitan water agency to speak to, its evident that actual implementation of the Safe Drinking Water Act takes place a the local and State level. Over the years, AMWA has consistently urged increased federal funding for State drinking water primacy programs because of this fact. We know the funds which are set aside for the States only partially meet the requirements placed on them and believe that overall funding levels should not be reduced. Speaking to the priority issue, drinking water has never previously enjoyed the benefits of an SRF. For many small communities it offers the only reasonable hope for them to meet federal requirements. I agree with the Administration and the Congress that now is the time to make drinking water SRF a priority.

Again, thank you for the opportunity to respond to the above questions. If I may be of any further assistance, please let me know.

Sincerely,

G. C. Gunter

Senator CHAFEE. Well, thank you very much, Mr. Gunter. We appreciate your coming here.

I didn't mention that we do have a clock set up. Mr. Gunter came right in under it, right in on target. We allow everybody 5 minutes, but we're not going to put anybody under the guillotine if they miss. The green means keep going; the yellow means you're getting toward the end of the 5 minutes; and the red is a sign of hope that you might wind up, because we want everybody to have their say.

[Laughter.]

Senator CHAFEE. So thank you very much, Mr. Gunter.

Now, Mr. Olson? Mr. Olson is from the NRDC, Natural Resources Defence Council right here in Washington.

Nice to see you.

STATEMENT OF ERIK D. OLSON, SENIOR ATTORNEY, NATURAL RESOURCES DEFENSE COUNCIL, WASHINGTON, DC

Mr. OLSON. Thank you, Mr. Chairman. I am Erik Olson with the NRDC, and I am appearing today as the coordinator of the steering committee of the Campaign for Safe and Affordable Drinking Water, which is an alliance of over 300 public health groups and similar organizations—environmental justice, HIV/AIDS, and other organizations—who have joined together to seek stronger, more efficient protection of one of the Nation's most precious resources, our drinking water.

We appreciate the bipartisan negotiations that the committee has engaged in that have led to the development of this bill, and we are pleased with provisions in the bill, including the authorization for the State revolving fund and the retention of the amendments from last year that would require research on vulnerable populations, such as infants, pregnant women, children, and the elderly.

However, I must say that after a preliminary review of the bill, we are disappointed with provisions of the bill. We are disturbed that parts of the legislation would substantially weaken last year's bill, that passed 95 to 3 in the Senate, such as the weakening of the viability program, the operator certification and training program, the enforcement improvements, and source water protections.

While the Safe Drinking Water Act clearly has improved matters over the last 21 years since it was enacted, and some progressive water utilities certainly are voluntarily and conscientiously taking action to improve water quality, we must do more. Since the committee last held a hearing on this issue there have been over a dozen waterborne disease outbreaks, including a major Cryptosporidium outbreak in 1994 in Las Vegas, NV, in which dozens of immune compromised people died.

Since the last amendments were passed in 1986, CDC data indicate half a million Americans have become ill from the simple act of drinking a glass of tap water, and 10 to 20 times that number have been estimated to become ill without reporting it. According to the best available data, peer-reviewed, of humans—not of rodents—many hundreds to over 10,000 Americans contract cancer every year simply from drinking their water. The preventable

human suffering and economic costs of these illnesses are staggering.

The campaign is united behind ten tenets, which I have set forth in our testimony.

We have found that although some of the provisions in the bill would advance these principles, unfortunately many would not. My written testimony lays out some of the concerns that we have with the bill, but I wanted to highlight a couple of the amendments that we feel are especially important.

First, we have heard a lot about accountability and why there is an interest in local governments to make sure that the drinking water is safe. One thing that we feel is critical is that there be a right to know about what is in our drinking water. In particular, we believe the bill must make improvements in the law to empower local citizens with information about what's in their water. Specifically, as the National Drinking Water Advisory Council recommended recently, with representatives of the water industry, States, small water systems, public health, and other groups, the Safe Drinking Water Act should track California law and require all public water systems to provide their customers with an annual report on water quality.

In particular, we believe that this should include information on Cryptosporidium and any exceedences of health goals for contaminants, including arsenic and radon, and a review of any violations or waivers or variances that have been obtained by the system. Only through knowledge can the consumer know and take action to try to encourage compliance, and that is the only way that we can really assure that we will build the public support that is necessary for investment in our water supplies.

The second amendment that we feel is critical is that we must preserve EPA's ability to protect against those high-risk contaminants. We've heard much talk about the need to set priorities for the contaminants that pose the greatest risks. Well, we believe that the bill, frankly, would not do that, that Cryptosporidium, arsenic, radon, and certain other urgent threats to health potentially would go unregulated for many, many years as a result of some of the cumbersome procedural requirements to regulate those contaminants. For example, delaying the deadlines for regulating the known human carcinogen, arsenic; the known human carcinogen, radon; and the disinfection of groundwater in order to protect the public against Cryptosporidium—all those delays, we believe, are unsound and unwise.

We believe, at a fair minimum, that those provisions should be dropped or, at a minimum, the following three amendments should be included:

One, it should be clarified that where EPA finds an urgent threat to health, the agency is not constrained by all the procedural hoops. If the agency finds, for example, that Cryptosporidium is causing widespread illness and disease and that some of the procedural hoops are going to stand in the way of the agency acting, that the agency should be able to move forward with an interim standard immediately without having to go through the lengthy, multi-year process that is currently required.

Second, we believe that all water systems, pending the delay of any arsenic and radon rules or updates of those, should have to monitor for and notify the public of those contaminants in their water, if they are over the health goals.

And third, EPA should be required within 180 days of enactment to determine whether sufficient research is being funded in order to narrow the gap of knowledge on arsenic and radon in order to be sure that any delay is justified. Why delay if there isn't any research going on? So we believe EPA should be required to make a finding as to the adequacy of the funding.

Finally, we'd like to work with the committee on several other amendments, including a "polluter pays" amendment and one that would assure that the fair share of upgrades necessitated by pollution problems would be paid by those who have caused them.

Thank you very much for this opportunity to testify.

Senator CHAFEE. Well, thank you very much, Mr. Olson. You have detailed your provisions in here, and we will take a good look at them. We appreciate your testimony today.

Mr. Don Satchwell.

STATEMENT OF DONALD SATCHWELL, POST FALLS, ID, ON BEHALF OF THE AMERICAN WATER WORKS ASSOCIATION ACCOMPANIED BY: KARL KOHLHOFF, PRESIDENT, AMERICAN WATER WORKS ASSOCIATION, MESA, AZ

Mr. SATCHWELL. Good morning, Mr. Chairman and members of the committee. My name is Donald Satchwell.

Mr. Chairman, could I have my written testimony added to the record?

Senator CHAFEE. Sure.

Mr. SATCHWELL. I am a member of the board of directors of the community water system which provides drinking water to residents in and around Post Falls, ID. I have been a member of the Idaho Drinking Water Advisory Committee since its inception in 1989. With me is the president of the American Water Works Association, Karl Kohlhoff, from Mesa, AZ.

The American Water Works Association is the world's oldest and largest scientific and educational association of water supply professionals. The 55,000 members of the Association include scientists, engineers, technicians, plant operators, and utility managers, the guardians of America's safe drinking water.

I would also like to introduce Bill Drocke, who is the Idaho Drinking Water Program manager.

I am here on behalf of both the Idaho Drinking Water Advisory Committee and the American Water Works Association, to present the views of both groups on S. 1316 and reauthorization of the Safe Drinking Water Act. We commend you, Chairman Chafee and Senator Kempthorne, for your leadership in introducing S. 1316 and holding this hearing on the reauthorization of the Safe Drinking Water Act.

The Idaho Drinking Water Advisory Committee and the American Water Works Association strongly support S. 1316, and we urge you to take favorable action on this bill.

The Idaho Drinking Water Advisory Committee was instituted by the Idaho Department of Health and Welfare's Division of Environ-

mental Quality in 1989 to advise the DEQ on issues related to Idaho's Drinking Water Program. The membership of the committee represents the diversity of the drinking water community in Idaho. The membership includes water utility operators; elected officials; public works officials; legislators, and consulting engineers.

The Advisory Committee supports a Federal drinking water program. We believe the program should give States a great deal of flexibility in implementing drinking water regulations, and that, in turn, the States should be able to give the local water utilities a great deal of flexibility in complying with the rules and regulations. We believe that EPA, State regulatory agencies, and community water systems should join together as a team to assure safe drinking water for everyone.

We believe S. 1316 changes the playing field so that we can operate as a team.

It is important to remember that you can trust your local water purveyor to serve safe water to your constituents. In my capacity as a member of the Advisory Committee, I have attended many public hearings and other meetings with drinking water utilities in north Idaho, and at all these meetings every utility has been emphatic that they want to provide safe and clean drinking water to their customers.

In order to accomplish this, they need to have the ability to provide common-sense solutions. The Idaho Drinking Water Advisory Committee and the American Water Works Association endorse S. 1316 because it brings common sense to the goal we all share: providing our citizens with safe drinking water.

We believe this bill meets the four basic goals established for reauthorization. No. 1, it repairs a somewhat flawed contaminant selection and standard-setting process. No. 2, it gives States flexibility to control their own drinking water programs when they have primacy. No. 3, it realistically addresses concerns of those drinking water systems serving small communities. No. 4, it establishes a State revolving loan fund that will provide many communities the opportunity to finance much-needed improvements to their drinking water infrastructure, to provide safe water for their citizens.

In addition, S. 1316 provides a framework a beginning of realistic source water protection programs which involve local communities, to develop common-sense solutions using existing programs.

The capacity development provisions of the bill will go a long way toward improving the managerial, technical, and financial capacities of the public water systems.

AWWA and the Idaho Drinking Water Advisory Committee especially appreciate the emphasis on research in S. 1316. Good, sound research is essential if we are to have sensible regulation that protects public health.

Thank you for this opportunity to present our views. We appreciate the time and consideration given us during recent months. We look forward to continuing to work with you and the committee staff on Safe Drinking Water Act reauthorization issues to ensure passage of S. 1316 in the Senate.

Thank you.

Senator KEMPTHORNE. Mr. Chairman, if I could just mention, Mr. Satchwell has a distinguished reputation in the State of Idaho

for his sincerity and a reputation that he is the type of individual that you would want as custodian of your water, that you and your family are going to be drinking.

So, Don, we are just delighted that you're here today.

Mr. SATCHWELL. Thank you.

Senator CHAFEE. You have a lovely State, well represented in this Congress.

[Laughter.]

Senator CHAFEE. I believe Senator Baucus would like to introduce the next witness.

Senator BAUCUS. That's right, from another lovely State.

Mr. Chairman, Dan Keil comes from a very well-known family in Montana. The Keils are very heavily involved in farm, ranch, and business operations, particularly in north-central Montana.

I might just say, Dan, that I just got off the radio, an interview with Bret Stanghile of KMON, which serves that area, and he asked about you, to make sure that you're doing fine.

Dan is a board member of the National Rural Water Association, and he is also a member of the Montana Rural Water Association. He has been very active in the Montana Rural Water Association for many, many years. He helps operate the Conrad system. He is from Conrad, MT, Pondera County, just a real solid guy.

Dan, we are very honored that you are here. Thank you very much.

Senator CHAFEE. Well, with that strong introduction, I want to say that Montana is well represented in this Senate. We are very proud of Senator Baucus who, of course, was chairman of this committee last year and the year before. He set a fine tradition. And Senator Kempthorne, obviously, is a persons of great stature here. As you all know, he has been carrying the lead role in fashioning this bill, and much of the success of this bill—which I am sure will be there—is due to the work of Senator Kempthorne.

All right, Mr. Keil, go to it.

And, gentlemen, I apologize for going back and forth. Senator Kempthorne and Senator Baucus will be here, although I suspect Senator Baucus might be pulled back and forth, too, but I'll be back up before you are finished. I apologize for being in and out. Thank you.

STATEMENT OF DAN KEIL, MONTANA RURAL WATER ASSOCIATION, CONRAD, MT, ON BEHALF OF THE NATIONAL RURAL WATER ASSOCIATION

Mr. KEIL. Thank you, Senator Kempthorne and Senator Baucus.

Mr. Kempthorne, I apologize, being a Montana State University alumnus, for what we've done to Idaho over the last couple of years.

[Laughter.]

Senator KEMPTHORNE [assuming the chair]. Well, you know, that's just this current year. We're very proud of our football teams.

Mr. KEIL. Senator Baucus and members of the committee, on behalf of all small rural water systems, I appreciate the opportunity to testify before the committee on S. 1316. My name is Dan Keil; I live on a wheat farm in north central Montana. This is a sparsely

populated area 60 miles east of the Rocky Mountains and 60 miles south of the Canadian border.

Back in the 1970's, President Nixon went to Moscow and signed the SALT I agreement. As a result of this agreement, military construction of an antiballistic missile complex near my farm was canceled. One of the main components of this missile complex was a water system. With the closeness of the complex, the farmers in the area organized and obtained this water system for the benefit of the community. We constructed a distribution network of over 700 miles of pipeline to supply fresh drinking water to farm families in an area approximately 40 miles by 60 miles. Prior to the development of our water system, all of the families hauled water, some up to 30 miles, to their cisterns or collected runoff from their roofs. Today we have over 300 families on the system who pay an average of $65 a month for water.

In addition to serving on my water system's board of directors, I serve on the Montana Rural Water Systems Board and, as Senator Baucus said, the board of the National Rural Water Association. Montana Rural Water has a membership of over 380 small communities, all with less than 10,000 population. All of these communities appreciate the time and effort that Senator Baucus, Senator Kempthorne, and their staffs have dedicated to solving the problems, and are eager to pass this bill.

I would like to identify some facts regarding the country's small community water systems.

In Montana, 688 of the 694 community water systems serve less than 10,000 people each, and there is not one system larger than 100,000 people. As illustrated in my case, small water systems have dramatically improved the public health in rural areas. These small water systems make no profits; are locally governed by rural citizens who drink the water; and were built to improve public health by eliminating the use of contaminated wells, shallow wells, streams, bogs, or cisterns as a drinking water source.

Due to economics of scale, families in Montana on rural water systems often pay over $80 to $100 a month for service, and in some instances, $135 a month.

The backbone of a small system's compliance with the Safe Drinking Water Act in Montana and in every other State has been the grassroots technical assistance program, introduced by Senator Burdick of this committee in 1986. Each year our Association works onsite with over 1,000 small communities with water and wastewater needs, including the Safe Drinking Water Act and Clean Water Act compliance; maintenance; operation; operator training; pollution prevention; building new treatment; adjusting water rates, and long-term planning. Last year, of the 85 percent of the small community water systems as being in significant noncompliance—which we commonly refer to as SNICs—were brought into compliance. This direct result of Congressionally funded technical assistance has been the most beneficial and effective part of the 1986 act.

MRWS believes that this bill initiates a new approach to the Federal regulatory relationship with small and rural water systems. The greater emphasis on assistance, with an increase in technical assistance funding, is a major step in that direction. Reliance

on States to simplify and streamline monitoring and other requirements will greatly improve small community compliance with the law.

We are eager to work with the committee and the EPA to expand and extend this enlightened approach to regulation and enforcement of the Safe Drinking Water Act in rural areas. We appreciate the work done by this committee to make this new direction possible.

I appreciate the work that Senator Baucus and his staff, especially Jo Ellen, have given to the State and the National Association in developing this effort.

I would like to make one comment that this morning Mr. Chafee said that small systems are a priority of his. This blue book here, which we will provide to the members of the committee, demonstrates on a State-by-State basis what the programs of National Rural Water have done.

Here's another one, basically a list on a State-by-State basis, of the groundwater protection program that National Rural Water operates, because this was brought up by Ms. Browner. We will make those available to the members of the committee.

Thank you.

[Responses to additional questions of Senator Bond by Mr. Keil follow:]

ADDITIONAL QUESTIONS FOR MR. KEIL BY SENATOR BOND

Question 1. In reorganizing the EPA, some have motioned that the EPA's regional offices should be further decentralized with EPA personnel housed in State environmental agencies to provide an improved Federal/State partnership and a better understanding of States' needs and priorities. In your opinion, do you believe that this could provide improvements to the current structure? What other suggestions do you have for reorganizing the EPA?

Answer. EPA should not be further decentralized into the States. EPA should not be a participant in the administration of the program. EPA's role is to set standards, promote oversight, and collect information on the success or problems with SDWA information.

The variance, waiver, and exemption provisions in the SDWA should be under the sole discretion of States not EPA. Currently these provisions are so undefined that they result in an unworkable process in the Federal bureaucracy.

EPA regional offices should be responsible for explaining Federal regulations and documenting progress. Regional offices need to know if the SDWA is actually working in each State in the region. Presently it is very difficult to obtain information on exactly how effective the SDWA is being implemented and what changes need to be made. Regions should know the answer to these questions.

Question 2. If the Congress can only appropriate $500 million for a drinking water State Revolving Fund, are the proposed set asides out of this fund still top priority?

Answer. We strongly believe that on-site technical assistance which works in small communities is the priority funding in the bill. However in the SRF, technical assistance is only available if the annual SRF grant exceeds $800,000,000. Also, the amount of technical assistance available in the SRF is capped at 2 percent of the annual SRF grant or $10,000,000. Removing these two limitations would ensure the SRF also can be utilized for the small community TA program. In Montana and other States, on-site technical assistance is the backbone of small system compliance. S. 1316 provides $15 million for small system technical assistance which is an increase of $5 million over the current level. Small systems have the most difficulty complying with the SDWA—they have limited budgets to operate their systems and comply with the SDWA. Allocating a small portion of overall Federal spending on drinking water to TA results in a growing number of small systems moving into SDWA compliance. TA is the only contact the great majority of these systems have to help meet the SDWA requirements. TA has proven to be more effective and is less costly at solving compliance than enforcement policies. It also promotes grassroots support of the law and promotes local initiative. Because State

drinking water agencies are also regulating agencies, technical assistance administered by the regulatory agency often does not reach the smaller more vulnerable rural water agencies. It is operated by the small communities and not EPA.

Question 3. The Senate appropriations bill for EPA provides that 40 percent of the EPA's budget goes to States for their programs and infrastructure assistance programs. For instance, $1.5 billion of the total $2.34 billion of this account is for State Revolving Funds. Five hundred million dollars out of the $1.5 billion is held in reserve for drinking water pending authorization. What would be your recommendation for how this account should be structured? What would be your breakdown of priorities?

Answer. The $8.5 million in rural water technical assistance funding is the most important money being spent to actually improve public health and implement the SDWA in rural areas. At every hearing and in the Senate statements, the overwhelming consensus of having a SDWA is to improve the water quality in small communities. The major need for additional funding is always to assist small communities with compliance. Thus, small system's TA should be the top priority.

The problem with the Safe Drinking Water Act is that the existing Federal-State enforcement structure has not worked with small and rural water systems. Costs begin to significantly increase for both the Federal and State bureaucracies and for small water systems when the requirements and enforcement mechanisms for larger systems are applied to the smaller systems. For example: $13,000 per source for VOC Sampling for the City of Billings costs approximately 40 cents per customer but for Windy Acres Water Users Association it costs $866.67 per customer to do the same test.

The command and control strategy that has worked for larger cities does not work with small water systems. In fact, the entire EPA experience with environmental protection enforcement is only marginally applicable in working with over 50,000 smaller water systems. Small water systems were created out of necessity to reduce public health risks from water supplied by cisterns, shallow wells and small streams. These are not the type of institutions that EPA and State environmental offices can efficiently cover with the existing bureaucracy.

Small water systems will not go away. Neither Congress nor EPA will shut off a community's water unless there is a direct public health threat. Consolidation is taking place but geographic restrictions will limit this as a long term solution. The only real answer to solving the problem with small system compliance is to directly assist these small systems in developing their own approach for being in compliance. The smaller and more remote the system the greater the potential problem, and the more difficulty the Federal and State bureaucracies have in enforcing sustained compliance.

More money pushed through the existing Federal/State EPA system will have marginal results. States receive $70 million a year—they are requesting $160 million and say that it will take over $200 million to do the job properly. Most SDWA reauthorization proposals reflect this level of funding. Yet when States receive more money they seldom put people in the field. They simply expand staff to meet EPA requirements. If the small water system compliance problems can be significantly resolved the need for a larger State bureaucracy is reduced. This should allow Congress to stabilize the level of funding for State programs.

A way to reduce the cost of implementing the Safe Drinking Water Act is to solve both problems. The difficulty is that compliance has been a revolving problem as some watersystems come into compliance while others fall out of compliance because of changed circumstances such as a new operator or reporting mistakes. Increased enforcement pressure has helped some, but it has not significantly reduced the problem of revolving non-compliance. As a result there is pressure to increase the bureaucracy and command control role of EPA and States. This is anticipated to get even more expensive.

A program such as the rural water program can be used to reduce the practically insatiable demand for Federal and State staff; the entire SDWA enforcement program can be "reinvented" and the costs either significantly reduced or at least stabilized.

Senator KEMPTHORNE. Mr. Keil, thank you very much.

May I just note—I know that you are here both on behalf of the Montana Rural Water Association as well as the National Association. To all of you who are representing and speaking on behalf of your organizations, that's why at the outset I made sure that we

listed all of those national associations and other associations that have been part of this coalition. It is significant.

So again, you are well represented by the staff that you have working for you, as well as all of the organizations working with us.

Mr. KEIL. National Rural Water really appreciates that effort and appreciates the effort that the other members of the coalition gave in helping to put together this legislation.

Senator KEMPTHORNE. Thank you very much, Mr. Keil.

All right, our next speaker is Dr. David Ozonoff, who is chair, Department of Environmental Health, Boston University School of Public Health.

Doctor, welcome.

STATEMENT OF DAVID OZONOFF, M.D., CHAIR, DEPARTMENT OF ENVIRONMENTAL HEALTH, BOSTON UNIVERSITY SCHOOL OF PUBLIC HEALTH

Dr. OZONOFF. Thank you, Mr. Chairman and members of the committee. I am David Ozonoff. I am a physician, and I am chairman of the Department of Environmental Health at the Boston University School of Public Health. I've been a practicing public health physician and scientist for more than 25 years, and over those years a good deal of my research has involved the public health aspects of drinking water, so I am particularly happy to be able to present my views here today. I would like to publicly thank the chairman of the committee for his many years of nonpartisan leadership on important environmental matters.

For most Americans, turning on a tap is truly an act of faith, and if our research experience is any guide, that faith has been severely shaken for many Americans. When we ask in our studies what the source of drinking water is, many Americans tell us—in fact, in excess of 10 percent; somewhere around 10 to 20 percent tell us—that they drink bottled water. Given the fact that bottled water costs about a thousand times as much as tap water, this would seem to be an intolerable cost to consumers, and their willingness to pay that cost demonstrates an understanding of a fact which I think is not shared by all elected officials, of the cardinal importance of safe drinking water to health. In fact, that's the single point that I have to make here today, that clean drinking water occupies a crucial—in fact, a unique—place in safeguarding public health in this country. I don't think its uniqueness and its crucial importance, although may people discuss it and are certainly aware about the public sensitivity about it, I don't think it is fully appreciated. I would like to at least make that point, and I will do so very briefly.

To see the importance of it, we could look to the developing countries where unclean water takes a frightful toll, but we really don't have to go that far. We only have to look at our own country within the lifetimes of many of our older citizens today. My mother, who is 91 years old and was born in 1904 in LaCrosse, WI, was really born just at a time when tens of thousands of people were dying every year from waterborne disease, and just a few short years after devastating cholera epidemics ran through this country.

That seems like ancient history to us, but it isn't. In fact, it's within the lifetime of my own mother. The reason it seems like

such ancient history is because modern public health measures have transformed our experience of waterborne diseases fundamentally, but they haven't transformed it irreversibly.

One of the greatest public health triumphs of this century is the provision of safe and healthful drinking water to most of our citizens, and that single measure has done more to improve the health of our communities, at a lower cost, than any other achievement in public health, and I'm not excepting here immunization, advances in medical technology, modern medical treatments, or any modern miracle drugs. Community water supplies affect an entire community at once. They provide an extraordinarily cost-efficient way to deliver a commodity that is essential to good health and quality of life, but this same efficiency is a two-edged sword. A piped water supply is also an extraordinarily efficient way to deliver poisons and disease organisms to the whole community at once, and this is not just a theoretical possibility, as 400,000 people in my home town of Milwaukee have cause to know. A hundred of those 400,000 people can't be here to make their wishes known today because they died during that episode of contaminated water, but I feel that to some extent I am representing my fellow citizens here today.

We are at a critical juncture in public health now, at the end of this century, just as we were at the beginning of the century when water chlorination and filtration were first instituted. Our community water supplies are serving much larger populations with a raw water that is itself suffering from land use pressures that compromise its quality. We have budgetary constraints in our municipalities that cause them to scrimp on the kinds of invisible basic services that we take for granted, like water supplies. They often place in charge underpaid and poorly trained operators, which is something like handing over a semitrailer going 100 miles an hour to somebody with a learner's permit. We have a growing population of citizens who are especially vulnerable to water of marginal quality, such as people with compromised health, the frail elderly, the AIDS patients, or those on cancer chemotherapy. At the same time that all this is happening, we have an aging infrastructure in our major cities which includes old and antiquated water treatment facilities that now have to be updated, irrespective of any regulations that are occurring. And as those replacements are built—and they are going to be built in the next couple of years—we are literally setting in concrete the Safe Drinking Water Act.

The impulse of this moment is going to last for decades as these facilities are built. As the old saying goes, "Act in haste; repent at leisure." It's a cliche to say that "the devil is in the details." Of course, there are many details in the Safe Drinking Water Act, but there is enough satanic potential in the bottom line here. Safe drinking water is fundamentally different from other environmental programs. When you play around with safe drinking water quality, you are playing with fire. It's perhaps the only instance where water can start fires, metaphorically speaking, rather than put them out.

A water supply is a very long lever, with the weight of the community's health at the other end. You make small changes at one end of this lever, and it is magnified into very large movements in

health status at the other end, as the more than 100 waterborne disease outbreaks that we've had in recent years will testify to.

Tampering with the Safe Drinking Water Act is almost certain to produce foreseeable consequences to public health, and it is not worth the risk. In particular, it is crucial that the EPA be allowed to act promptly to protect our citizens from urgent threats to health whenever they are revealed by solid and persuasive scientific evidence.

As I understand it, the current bill has a variety of procedural study-and-analysis requirements that are going to severely going to hamper timely efforts to deal with imminent threats to health, whether they be microbial threats to the elderly or threats to the unborn from toxic agents or byproducts that can cause birth defects or spontaneous abortions.

Finally, I agree with a wide range of public health and public policy opinion, ranging from environmental groups on one side to Senator Simpson and ex–Administrator Ruckleshaus on the other, that local communities have to be strengthened and empowered to deal with local drinking water problems. The most powerful tool to deal with that on the local level is knowledge and information. Local communities should and must be kept informed of how well their water utility treats their water, and that means prompt notification of exceedences and violations of health-based standards.

In closing, I really come here with the utmost concern and urgency, and I implore the committee to tread with extreme caution in amending the Safe Drinking Water Act. This is a tool and resource that has made this country the envy of public health professionals around the world. Whatever your feelings about other EPA programs, such as endangered species, wetlands, clean air, whatever, you must recognize that safe drinking water is different and it is unique from the public health perspective. The risks are not speculative. They are starkly represented by days of work and comfort lost to illness and by the lives of our fellow citizens who die prematurely from contaminated water.

I don't claim that this act has been perfect in every detail. Clearly it has not, but whether those details are thought devilish or not, it has worked remarkably well, and its spirit has to be retained and strengthened.

Thank you for the opportunity to present these views.

Senator KEMPTHORNE. Dr. Ozonoff, thank you very much.

Dr. Richard James Bull, who is a senior staff scientist with Battelle Pacific Northwest Laboratories.

STATEMENT OF RICHARD JAMES BULL, SENIOR STAFF SCIENTIST, BATTELLE PACIFIC NORTHWEST LABORATORY

Mr. BULL. Thank you, Senator Kempthorne and members of the committee, for the opportunity to give my views on S. 1316.

I am, as you stated, Richard J. Bull, a senior staff scientist at Battelle Pacific Northwest Laboratory. My interest in the issues before you, however, does not stem from my present employer so much as it does from 14 years' research experience at the U.S. Environmental Protection Agency's laboratory in Cincinnati and an additional 10 years of research in academia. I continue to have, of course, research interests in this area.

From a scientific perspective, my principal concern is the translation of scientific information into public policy in the drinking water arena. While I am very much a proponent of a quantitative risk assessment, I am a little disturbed when extrapolation begins to be built on extrapolation, and the outcome of the process doesn't really meet the basic tenets of common sense.

I think that in this bill you are considering issues that surround the production of byproducts from disinfection of drinking water, corrections that could mandate the removal of the naturally occurring arsenic from drinking water in the western United States, and mitigation of risks from radon exposure, among other issues.

I want to state up front that I strongly support the provision of section 4 that repeals the previous requirement that 25 contaminants be reviewed for regulation under the Safe Drinking Water Act every 3 years. I guess I'm not alone in that. In my view, those reauthorizations of the Safe Drinking Water Act really, essentially, assured that the agency could not focus on problems that really were specific to drinking water with the limited resources that were available to do that.

I find the fact that this bill focuses on problems specific to drinking water refreshing. Resolution of health risk issues around waterborne infectious disease, disinfectant byproducts, and arsenic go directly to, I think, the political responsibility held within each community for the provision of safe drinking water sources. In fact, I think we probably would say that the new authorization does take into consideration traditional considerations of public health in a very good way.

In particular, I appreciate the provisions allowing the Administrator the discretion to consider competing risks that may be increased as a result of specific regulation whenever the benefit obtained from regulation cannot justify the costs it imposes.

I think, as has been stated by other speakers, the first intent of centralized facilities for delivering drinking water is to prevent the spread of waterborne infectious disease. Treatment of water with reactive chemicals is the most cost-effective means of dealing with such problems, and it may be the only one that can be applied effectively in small systems.

There is no doubt that these processes do create what we might refer to as "hazardous chemicals" as byproducts when applied to drinking water, and in one case, chlorination, the epidemiology data does suggest that these byproducts cause a risk of cancer to humans.

There are several problems with these studies and the conclusions that might be drawn from them. One of them is that it's not really clear what byproducts might be responsible for those cancers identified in humans, or how those risks might vary from location to location within the country. I have a specific example in my written comments, that I won't go into for the sake of brevity, to indicate that we really need to know what those are before we can start looking at alternatives down the road. I'll avoid getting into some technical details here.

I endorse the provision for postponing the regulation of arsenic in drinking water until a research program can be completed that resolves the risk issues. That's been something that's been a burn-

ing issue as long as I've been acquainted with the Environmental Protection Agency, and it's been an unresolved issue because of the lack of a focused research program.

The amendments also appear to provide a better context for the regulation of radon in drinking water.

And finally, as a researcher I strongly support the provisions of the amendment for properly-directed research. I think it is important to recognize that only the Federal Government has the resources and expertise to deal with national problems of this complexity in a research context, but it owes a debt to local communities where public trust becomes a very big issue, as I think Senator Lieberman suggested earlier.

So with that I would close my comments and thank the committee for the opportunity to speak.

Senator KEMPTHORNE. Dr. Bull, thank you very much.

We now have Mr. William R. Mills, Jr., general manager, Orange County Water District, for the Association of California Water Agencies.

Mr. Mills, welcome.

STATEMENT OF WILLIAM R. MILLS, JR., GENERAL MANAGER, ORANGE COUNTY WATER DISTRICT, ON BEHALF OF THE ASSOCIATION OF CALIFORNIA WATER AGENCIES

Mr. MILLS. Thank you and good morning. As you said, my name is William R. Mills, Jr., general manager of the Orange County Water District in southern California. We serve approximately 2 million residents in our area.

I am here today representing the Association of California Water Agencies as chairman of the ACWA Water Quality Committee. ACWA's members collectively deliver about 90 percent of all of California's delivered water supply. They also represent the Safe Drinking Water Committee of the National Water Resources Association.

It is my pleasure to be here today to express our support for S. 1316 and to discuss to why this legislation is vital to California. I would like to start by thanking Chairman Chafee, along with Senators Kempthorne, Baucus, Smith, Reid, and Boxer and others on the committee, for their contributions in crafting this bill and for holding this hearing.

ACWA especially supports the bill's provisions on good science, voluntary source water protection, radon, and research funding.

With regard to good science, ACWA's members strongly support efforts to incorporate good science into a reformed standard-setting process.

Under current law, the city of San Diego expects to spend about $60 million over the next 10 to 15 years to meet standards in the act which may not provide commensurate health benefits. A similar concern was voiced recently by Senator Diane Feinstein, who cited how compliance with the current act will cost the city of Los Angeles in excess of $245 million over the next 5-year period. In all of California, expected or pending regulations could raise the annual compliance price tag to $7 billion per year. Given these costs, requiring the use of good science to set new drinking water standards

will assure the public that the regulations will result in real health benefits.

ACWA members support the inclusion of a voluntary source water protection plan in the bill. This provision is a voluntary approach that encourages agriculture, industry, and urban sectors to undertake nonpoint pollution control for the benefit of downstream water suppliers. An example this at work can be seen at the Metropolitan Water District of southern California. MWD has recognized that even with a substantial financial investment, over $1.2 billion over the next 10 years in water treatment facilities, there is no guarantee that new treatment processes will remove all contaminants not yet regulated or identified. MWD must have the cooperation of those who live and work upstream to help prevent contaminants from entering the source water to avoid expensive treatment later on.

ACWA, along with the Alliance for Radon Reduction, supports the provision in the bill that would establish a drinking water standard for radon that would be related to the background level of radon in outdoor air. Radon from soil gas is responsible, as you know, for 99 percent of the public's exposure to radon, while drinking water accounts for only 1 percent.

The Science Advisory Board has stated, "Setting a water standard of 3,000 picoCuries per liter would result in water contributing no more radon in indoor air than is present in outdoor air."

The overly restrictive radon standard considered by EPA would have placed a significant burden on California communities. For example, the city of Fresno would have been required to spend over $190 million to comply; and in Orange County, where I live, we've determined that the compliance costs would exceed $110 million, and that doesn't include the cost of land or operational costs, as well.

With arsenic, the uncertainties in the health risk assessment for arsenic ingestion have really complicated EPA's task of developing a revised arsenic standard. EPA has concluded that there is no need "to gather additional information on the potential health benefits of regulating arsenic, and on the potential treatment technologies, before proceeding with the regulations."

Now, the water supply community and other industry groups have also recognized the need for additional health effects research on arsenic. Already, professional associations such as the American Water Works Association's Research Foundation have committed over half a million in current arsenic research projects. ACWA would like to express unqualified support for research provisions of the bill, the findings of which—especially for microbiological contaminants, such as Cryptosporidium—will be of prime importance to San Francisco and other cities in California. Adequate and timely research is critical to assuring that EPA has good science available upon which to base drinking water standards.

ACWA appreciates the attempt to clarify in Federal law the definition of public water systems for purposes of drinking water regulations. The language in the bill is acceptable to several of our large agricultural systems, but still may result in burdensome new requirements for smaller systems. ACWA will be pleased to work with the committee and the staff to continue to clarify this lan-

guage, to assure that these smaller systems are not unreasonably impacted.

In closing, again I would like to thank you for this opportunity to present the views of the California water community. ACWA believes that the committee has produced a reasonable and necessary reform of the Safe Drinking Water Act. We support the bill as introduced and look forward to working with you to ensure its quick passage by the Senate.

Thank you.

Senator KEMPTHORNE. Mr. Mills, thank you very much.

Senator Baucus, I am pleased that you returned. As I sat up here alone, I had mixed emotions.

[Laughter.]

Senator KEMPTHORNE. On the one hand, I am delighted that I have been able to be here for all of the excellent testimony that has been given. On the other hand, I was worried about what some of you may be thinking—that, unlike other Senators, I had nowhere else to go.

[Laughter.]

Senator KEMPTHORNE. So anyway, we're having lunch brought in——

[Laughter.]

Senator KEMPTHORNE. No, actually, it's very close to noon. I will have to depart for a commitment.

But if I may, let's begin some questions. Let me begin, if I may, with Mr. Satchwell.

Don, as a member of the State's Drinking Water Advisory Committee, you are in a unique position to provide advice to this committee. This bill attempts, as you know, to give States greater authority to tailor the drinking water requirements to suit State circumstances and to reduce the opportunity for EPA micromanagement.

Do you feel that this flexibility is necessary? And do you feel that that flexibility will be misplaced with the States?

Mr. SATCHWELL. I believe that the States need the flexibility. I think it's a critical part of being able, as an operator, to deliver safe water. If I don't have the flexibility to do different things, then my hands are tied from a financial standpoint to deliver safe water.

So to answer your question, are your trusts misplaced, I don't believe so. As I stated in my testimony, I have never, in all the meetings I've attended—and I've been on the board of directors of our community water system for 20 years—at no time have I ever heard anyone even mention or think of mentioning that they want to not deliver water that is as safe as they possibly can.

Senator KEMPTHORNE. All right. Thank you very much.

Mr. Gunter, do you think that allowing the Administrator to set a standard based on cost benefit will strengthen or weaken public health protection?

Mr. GUNTER. I think it will strengthen public health protection. What we're running into in Missouri are a lot of the contaminants that really don't apply, and yet we have—say, something like Cryptosporidium, which is a real threat in every water system until we can get a lot of the research done.

What we can gain from that is that if we are allowed to negotiate a standard and we are allowed to tie it to health concerns as opposed to just having another table of standards that don't take into consideration the costs that we're going to have to bear, we're just going to do what some of the others have already done, and that is just keep increasing rates until it becomes untenable for our citizens.

So it is absolutely essential. It doesn't weaken it. It just gives us more of an opportunity to participate in the process by looking at what happens to us from a health perspective.

Senator KEMPTHORNE. All right.

Mr. GUNTER. That's the biggest gain that we've got, to look at it from a risk perspective. We'll be able to respond much quicker with those that are high risk and we won't get bogged down into just "covering the waterfront."

Senator KEMPTHORNE. All right. I appreciate that very much.

Dr. Bull, I understand that EPA had a research plan for Cryptosporidium as early as 1984 but never implemented that research plan until the Milwaukee outbreak. Given the immediate risk presented by microbials, there are some of us on the committee that can't understand why the agency has diverted research dollars to other kinds of contaminants and other EPA programs.

If it's true that the agency failed in its basic mission with regard to Cryptosporidium, can you tell us why that may have happened?

Mr. BULL. I could probably tell you more than you want to know——

[Laughter.]

Mr. BULL [continuing]. I was working in EPA during that era, and was actually director of the program in Cincinnati until 1984. Because of the focus on chemical contaminants, not only in the drinking water area but other areas, in 1988 there was essentially a decision to take the microbiology effort out of the Health Effects Research Lab, and all that was left was activities related to monitoring and treatment processes.

The removal of that particular group and the focus on identifying new watersome infectious diseases it provided, was the reason why these efforts fell over the years. They lacked the organization and resources needed to focus on microbiology-related problems.

Senator KEMPTHORNE. Do you feel that with this legislation we now can prioritize and we can go after things like Cryptosporidium?

Mr. BULL. Yes, I do.

Senator KEMPTHORNE. My time has expired, Mr. Chairman.

Senator CHAFEE [resuming Chair]. Senator Baucus?

Senator BAUCUS. I thank the chairman. Mr. Chairman, I have one somewhat specific question and one general question. The specific question is for my good friend, Dan Keil.

Dan, I was just wondering if you think the small system variance provision in the act will allow the systems the flexibility they need to apply the act?

Mr. KEIL. Thanks for asking that.

[Laughter.]

Mr. KEIL. It's going to be somewhat better than it was before. There is still a problem that some States just don't want to take

the initiative to obtain variance waivers. Until that works through, I think it will finally work out.

Senator BAUCUS. Before I forget the general question, what about the requirement in the bill where EPA is supposed to list alternative technologies? I know the States have been reluctant to approve alternative technologies for fear that the EPA wouldn't approve. I was curious whether you think this provision, requiring EPA to provide the list, is going to work, or do you have some ideas how to make it work better?

Mr. KEIL. I know that in our State it is very difficult to get any alternative technology approved by the primacy agency. Anything that we can do to improve that will help.

Senator BAUCUS. If you have any thoughts on how to improve that before we wrap this up and finally get this bill signed, I would appreciate your letting us know.

My general question is this. This is only one stage in the process here, and I think this is a pretty good bill. It has pretty good support across the board. Here we are with the Environment and Public Works Committee, but there is another body, the House of Representatives. They have their own version.

I am just curious. I would like to know the degree to which all of you can essentially support this bill. There are going to be efforts to weaken it, and there are going to be efforts to strengthen it. What I would like to see is all of you basically hanging in there together and sticking with what we've got, and not be tempted to work to destroy what we have here. Some of you will be tempted to support some amendments from an environmental perspective. Others will be tempted to support amendments from the other side, which is going to draw the wrath of the environmental community.

So here we are; we have seven of you. Do you basically commit to support this bill? Which means, if you can, you're going to basically not work for amendments.

Mr. MILLS. May I make one comment, Senator?

Senator BAUCUS. Certainly.

Mr. MILLS. I think our difficulty here is deciding what you mean by "weakening" and "strengthening."

[Laughter.]

Senator BAUCUS. When I said that, I knew I was going to run into that question.

Senator CHAFEE. And the other thing is, what do you mean by "basically support"?

[Laughter.]

Senator BAUCUS. We know what we're talking about here.

Mr. MILLS. Senator, if I may comment, we like the bill, and we think that it incorporates some of the most important issues that are out there—for instance, good science. We just think that's such an important issue, and that's the issue that we must rely on to set standards. That's one of the most important hallmark features of this bill, plus many others. So we are in a position to continue to just support the bill as it is.

Senator BAUCUS. Dr. Ozonoff.

Dr. OZONOFF. Well, Senator, I don't represent a special interest other than the special interest of public health, so I won't be in there, slogging it out, to weaken it or strengthen it one way or an-

other. I'm doing my part by coming here today and telling you folks what I think about it.

I'm always amused when I hear about "the mantra of good science" because on the one hand this bill is supporting some research; and on the other hand, everywhere I look—and I am a scientist supported by Federal funds entirely—all of my research budgets are being cut, and it's the same with all of my colleagues in other universities and other research centers.

So although everybody wants good science, nobody wants to pay for it.

One comment I would make is that perhaps this committee in its other authorizations—for example, Superfund—could support some good research science which bears directly on the drinking water issue.

Senator BAUCUS. Sure.

Mr. Olson.

Mr. OLSON. I guess I will let my written statement speak for itself. We have some concerns about the bill. I think there are some good provisions in it to build on, but I don't feel that we can support it at this point until some amendments are made.

Mr. BULL. I think it's a very good bill. In my experience with the Safe Drinking Water Act it has provisions specific to drinking water problems. I like the provision for research, not only because I'm a researcher, but because the problems that we're facing in drinking water are evolving concerns, not necessarily the ones set in time today. As drinking water improves we need to look at treatment practices and what they mean in terms of increasing and decreasing risk in a continuing way. We must continue to examine questions of availability and the complexities of treatment and distribution of drinking water.

Mr. SATCHWELL. I'd like to give you, possibly, two scenarios, since I am speaking for two different groups.

I would say that AWWA supports and urges the Senate to pass this legislation. Now, as far as the Idaho Drinking Water Advisory Committee, I believe they would vote unanimously to back this bill 100 percent.

Mr. GUNTER. Senator, I was heavily involved in the negotiations that led up to this. We're not going to "cry in our beer." We strongly support it. We feel that this is our best opportunity to get the reform through, and we're going to back you 100 percent.

Senator BAUCUS. Thank you.

Dan.

Mr. KEIL. Senator, I think that our colleagues are all in agreement that this is a good bill, although we have some minor reservations on certain interests. I think that we can support the bill.

Senator BAUCUS. I appreciate that.

As I listen to all of you, I think that we're well on the way. Each of you has a few little differences, but we're well on the way. We can't let perfection be the enemy of the good here. This is a democratic process. We have to work together. The whole is greater than the sum of the parts. I just urge us to stick together, and that means both sides. For example, if somebody has a potentially weakening or strengthening amendment, I urge the other side to suspend judgment and think first before automatically opposing it.

That works both ways. But nevertheless, I just urge us to stick together.

We have something in hand here that's about done. Let's not let it get away. Thank you.

Senator CHAFEE. Well, I echo what Senator Baucus said. As I mentioned earlier, we think, gee, this is great; here we are in the Senate; everybody is approving; we have Senator Dole, Senator Daschle, both leaders; we've got everybody else, it seems, on the bill, the chairman of the subcommittee, the ranking member of the subcommittee, the chairman of the full committee, the ranking member of the full committee. And that all seems fine, but that's exactly where we were a year ago. As you know, it all came crashing down—for extraneous reasons, frankly. I think it came crashing down for factors that weren't associated with safe drinking water, but nonetheless.

So I think we do have to try not to let improvements that you, me, or anybody else thinks would make it better, get in the way of getting a good bill passed.

Dr. Ozonoff, I read over your statement. I'm not sure what your conclusion is. You say, "Tampering with the Safe Drinking Water Act is almost certain to produce foreseeable consequences to public health. It is not worth the risk. In particular, I believe it is crucial that EPA be allowed to act promptly to protect our citizens from urgent threats to health."

I'm not sure what you're specifically saying there. I hope what we're doing can't be called "tampering."

Dr. OZONOFF. Senator, I'm glad you asked that question, because the minute I said it I realized there was some danger I might be misunderstood, saying that this bill was tampering with it.

I was actually referring to what you and Senator Baucus were referring to a moment ago, which is attempts at this point to make changes in it that would serve one particular interest or another.

On the other hand, that particular point is a matter of concern to me with respect to this bill——

Senator CHAFEE. When you refer to "tampering with the Safe Drinking Water Act," are you talking the existing legislation or this bill?

Dr. OZONOFF. I was really referring to the spirit of the Safe Drinking Water Act.

Senator CHAFEE. The legislation that is currently on the books?

Dr. OZONOFF. Yes. I think the spirit of the current act doesn't deserve the kind of press that it has received at this hearing, frankly. I think that the intent of that act, the spirit of it—that's not to say that there weren't plenty of difficulties and problems with it—was a very strong statement about the integrity of drinking water in this country. It is the envy of public health professionals around the world.

I think that the changes that are being proposed this time around, by and large, are good changes. I have some concern—I had two specific concerns which I mentioned in my statement. As I said in my statement, drinking water occupies a very unique position in public health. It is perhaps one of the most powerful influences on the health status of a community. It is one of the quickest ways to affect the health status of a community, and one has to be

extraordinarily careful when one affects that system as it is operating or as it is going to operate. And in particular I am concerned about any changes that are made in it that will certainly be set in concrete, literally speaking, because the current situation in the utility industry is that there are many new plants now being built and many renovations going on because of the decaying infrastructure in our cities. In my own city, for example, in Cambridge, Massachusetts, they are about to build a new water treatment plant because the old one, which was built in the 1930's, isn't going to work anymore. Whatever happens here is going to affect what that plant is going to look like for the next 30 or 40 years.

I really came here today, as I said a moment ago, not representing detailed line-by-line analysis of this bill, but as a public health professional concerned about what I consider to be the nub of this bill, which is public health.

Senator CHAFEE. You know, we sit here and we deal with these things, and sometimes it's very helpful to have testimony such as yours here that brings us up short.

You talk about when your mother was born, cholera was a major problem; not only in the world, but in the United States. And then you say, "Chief among the public health triumphs of this century has been the provision of safe and healthful drinking water to most of our citizens. This single measure, namely, safe drinking water, has done more to improve the health status of the community and at a lower cost than any other achievement, not excepting immunization, or advances in medical technology, or modern medical treatment and drugs."

So it really is important——

Dr. OZONOFF. It's extraordinary, as a matter of fact.

Everybody here at this hearing has commented on the importance of this to the public and the importance to public officials of safe drinking water. Everybody knows it, but I don't know that there is that real core inner conviction or realization of how extraordinarily important this is. This is a system that delivers both safe and healthful water to everybody, or it delivers poisons and disease organisms to everybody. And when you mess around with it, you're playing with fire.

Senator CHAFEE. Could I just ask one last question here?

In my opening statement I said that the most important step we could take to improve the safety of water is assistance to the small systems. Do you folks agree with that? Or am I off base? Obviously some of you are from big systems, but it seems to me that the big systems function pretty well. It's the small systems, and not necessarily governmental systems. Again, I mentioned the trailer park systems.

Do you think that's where one of the principal challenges lies?

Mr. KEIL. Senator, as a member of one of the organizations that deals with small systems, yes. I think that the technical assistance programs that we offer to the small systems—as an example, in Montana we have 24 percent turnover in operators every year, because the operator is the garbage collector and he's the dog collector and he does a variety of things, runs a motor grader, in a lot of small communities, so one of the things the technical assistance program does is go out and help him through the process, keeping

records and all that kind of stuff. And this is as a direct result of the 1986 act. It has done a significant job in getting these small systems into compliance, helping them through the efforts to provide safe drinking water to their customers.

Senator CHAFEE. Well, thank you all—oh, Mr. Satchwell?

Mr. SATCHWELL. I would just like answer your question in this manner. I believe that the SRF money is absolutely essential to the small systems. I don't mean by that that they have to live off of grants. I believe the States, if they have the flexibility with the SRF money, can start that process of fixing the systems, and over a long period of time the systems can pay the States back.

I think what I see as happening is the same thing that happened with the Clean Water Act, where the wastewater treatment SRF money went. I think that was a huge success. I think it's still a huge success, and I foresee that happening with the drinking water.

Senator CHAFEE. Well, thank you.

Mr. Gunter.

Mr. GUNTER. Senator, I represent one of the medium-to-large systems. We have huge infrastructure problems, and most of us have had to raise our rates significantly over the last few years. We see that ongoing in the near-term.

Our capital improvements program for water, just to take care of the infrastructure problems, is going to be about $150 million over the next 5 years, which is going to require rate increases.

In addition to that, the thing that we were talking about as far as sound science and keeping costs down by having good health information, is critical to the larger systems. We can't afford to do the research. We can't afford to make a mistake. Every time we make a mistake, it's big problems, not little problems. It's big problems.

Senator CHAFEE. OK.

Senator Kempthorne has a question.

Senator KEMPTHORNE. Mr. Olson, let me ask you this. Do you agree with EPA Administrator Browner and with the Governors, that with this legislation we can prioritize and we can devote the resources necessary to deal with things like Cryptosporidium?

Mr. OLSON. Senator, our concern is not with eliminating the 25 new contaminants every 3 years. We've heard a lot about that today, and we agree that that provision, although it was useful for a while, is in need of replacement.

Our concern is that even for those highest priority contaminants, like Cryptosporidium, we believe that there are some unnecessary burdens that may be placed on the agency before they can move forward to deal with them; and that in fact, having the groundwater disinfection rule put out for another 5 years, or having the agency have to jump through a bunch of additional hoops, if it turns out that there is an emergency and the agency has to move forward, it will make it more difficult for the agency to move forward, even on the highest risk.

So we think there are simple things that could be done to the bill to fix that so that if there is an urgent threat to health, the agency can move forward. I think that would be an important step toward

making the bill—to allow the agency to focus on the highest health threats.

Senator KEMPTHORNE. Mr. Keil, just to follow up on what you said, one of the provisions of this legislation is for the States to develop a strategy to improve the financial, the technical, the managerial capacity of public water systems, where capacity is lacking.

My question is this. From your experience, what is the single most important thing that the State can do to help the small water systems?

Mr. KEIL. Well, there are a lot of them. In Montana and the west we have a problem with distances between systems, so some of the issues like consolidation are really impractical to come up with.

I think that on a Statewide basis, that State program with the technical assistance and the training that the system operators need—everybody has the want to supply water of good, safe quality, and there are just some things that they need to keep following up on. It's very difficult to get around. Our staff people travel from system to system, and a lot of times they spend a couple hours just getting from one system to the next. They work with a system, spend two or 3 hours there or half a day; they don't accomplish a whole lot when they have to go such a great distance. We try every way that we can to bring them together and provide that technical assistance, getting the communities responsible for their own actions. That's basically what it amounts to.

Senator KEMPTHORNE. All right. Thank you very much.

Dr. Ozonoff, let me just follow up on the conversation you were having with Senator Chafee.

You said that the 1986 act "has worked remarkably well, yet it is current law that has left Cryptosporidium unregulated while lesser-priority contaminants get the attention and the resources."

Let me just ask, what provisions in this measure before us today do you support?

Dr. OZONOFF. I would say that I support most of the measures in the bill, but I have concerns about several, and I mentioned them in my testimony. Mr. Olson just mentioned one about whether the agency would be willing to act. The other has to do with the communities being informed properly and timely. That has been the most powerful lever that we have seen over the years to getting things done, not just in the water utility industry but anywhere, when people find out what's going on. I would like to see those provisions strengthened.

Generally though, I would join with the others and say that this is a remarkable attempt, given the current climate, that such a nonpartisan effort could come out. It's somewhat of a miracle. I wish it would happen elsewhere.

Senator KEMPTHORNE. Thank you.

Mr. Mills, the source water protection provisions of this bill envision a locally driven voluntary partnership program. This was partly to minimize Federal and State interference in local land use decisions, but also to provide a framework in which community water systems, local governments, and local stakeholders can solve problems in a nonadversarial method. This voluntary, incentive-based approach is a different way of doing things in the environmental area.

Do you think that this kind of approach will work for source water protection, and why?

Mr. MILLS. I think it will work. I think the agricultural community is clearly behind this, for one thing. But I believe that we found out that these incentive-based programs have worked elsewhere, such as in the air quality area. Pollutant-cutting has now been in existence for some time.

I also believe that when we put the issue at the local level and let the local entities get a "buy-in" to the solution, then we have a more effective solution than one which is just regulated from some distant point.

So it is my feeling that if this kind of a program can be tied to adequate financial incentives and providing technical assistance, that such a program has a great chance of working.

Let me give you an example. In our area we have, just upstream of the intake to our groundwater base, some 300,000 dairy cattle. Our scientists tell us that each cow produces eight times the waste products of a human being. So that's more people, actually, than we have in our district. Now, much of this is regulated, but it is a major problem to us, and we approached the industry some years ago and said, "It's a problem to us; how can we sit down and work this out? And we may seek Federal intervention over here and require this to happen." Perhaps it was a fear of that, but they did sit down and they said, "Let's see if we can come up with a program that will work." We have now designed a conceptual pilot program which would allow treatment at the source of those activities and greatly minimize the expenses of our district.

I think it's a good example of how an industry can be approached on a voluntary basis. They understand the issues of water quality and public health, as well. It's the issue of payment, though; they don't want to have the burden of payment. We're willing to step up to the plate and solve the problem. We just want to get their support.

Senator KEMPTHORNE. That's an excellent example. And now we provide the resources in this legislation to help you with that very example.

Mr. MILLS. Exactly. It's a wonderful start.

Senator KEMPTHORNE. Good.

Well, Mr. Chairman, I think it has been an outstanding panel. I appreciate very much all of the input as we consider this legislation.

Mr. Chairman, I really have to leave——

[Laughter.]

Senator CHAFEE. How many cows did you say you have in Orange County?

Mr. MILLS. We have 300,000 cows. In Riverside County, which is right next to our intake into our groundwater——

Senator CHAFEE. I mean, that's where Camp Pendleton is.

Mr. MILLS. We are north of Camp Pendleton. It is the largest concentration of dairy animals in the United States.

Senator CHAFEE. Are these 300,000—that's a lot of cows.

[Laughter.]

Senator CHAFEE. That's 300,000 dairy cattle?

Mr. MILLS. Yes, sir.

Senator KEMPTHORNE. But many of them are moving to Idaho.

[Laughter.]

Senator CHAFEE. Gentlemen, I want to thank you all very much. When you recognize how far these folks have come—Mr. Mills came from California; Mr. Satchwell from Idaho; Mr. Gunter from Kansas City; Dr. Ozonoff, he just came down from Boston; Mr. Keil has come from Montana; Dr. Bull, I'm not sure where you came from.

Mr. BULL. Washington State.

Senator CHAFEE. Washington State. I don't know who gets the long-distance travel award.

[Laughter.]

Senator CHAFEE. But I know Mr. Olson gets the short-distance travel award. He just came from down the street.

Thank you all very, very much.

[Whereupon, at 12:27 p.m., the committee was adjourned, to reconvene at the call of the Chair.]

[Additional statements submitted for the record follow:]

STATEMENT FROM GEORGE BRINSKO, PRESIDENT, WESTERN COALITION OF ARID STATES, (WESTCAS)

WESTCAS,
October 18, 1995.

Hon. JOHN H. CHAFEE,
Chairman, Committee on Environment and Public Works,
U.S. Senate, Washington, DC.

DEAR MR. CHAIRMAN: On behalf of the Western Coalition of Arid States, (WESTCAS) we are writing to compliment you and your cosponsors on S. 1316, "The Safe Water Drinking Act Amendments of 1995". The bill addresses the need to protect public health while taking into account the limited resources available to State regulatory agencies, public utilities and private water companies.

WESTCAS is a group of over one hundred water and wastewater districts, cities and towns in the States of Arizona, California, Colorado, Nevada, New Mexico and Texas. We have reviewed S. 1316 and feel that it addresses many of the issues of importance to us in the arid west. However, we are disappointed that it did not include language to expand the list of conditions under which an exemption or variance from the Maximum Contaminant Levels (MCL's) and prescribed treatment techniques may be allowed to recognize the impact of drought conditions on southwestern public water supply systems. We request that the SDWA be amended at Sec. 1416(a)(1) to add, "and drought conditions", after "which may include economic factors . . .".

On the positive side S. 1316 establishes a process that will set standards based on good peer reviewed science taking risk reduction benefits and costs into account. It provides flexibility to states in developing monitoring programs, and provides alternative technologies, variances and other mechanisms to help small systems comply with the drinking water regulations. It requires that standards for interrelated contaminants be developed simultaneously so that control of one contaminant does not result in increased risk from another contaminant. It establishes a drinking water system State Revolving Fund (SRF), to provide loans to water systems for treatment plant construction, upgrades and other purposes. The bill establishes a source water quality protection partnership program to prevent contamination of water supplies at the source. S. 1316 also provides appropriations for health effects and treatment technology research. All of these are supported by the Western Coalition of Arid States (WESTCAS).

We hope you will support these issues during the markup of S. 1316 and in any further negotiations.

We are available to provide you with additional information that you may need concerning drinking water issues and how they affect the people in our community.

Sincerely,

GEORGE BRINSKO,
President.

STATEMENT OF CAROL M. BROWNER, ADMINISTRATOR, U.S. ENVIRONMENTAL PROTECTION AGENCY

Good morning, Mr. Chairman and Members of the Committee. With me today is Robert Perciasepe, EPA's Assistant Administrator for Water. Thank you for inviting me here today on behalf of the administration to discuss a matter of increasing concern for all Americans, the safety of our drinking water.

I applaud you, Mr. Chairman, and all of the Members of the Committee for recognizing the importance of reauthorizing the Safe Drinking Water Act and providing the leadership necessary to strengthen our nation's drinking water safeguards.

Over 2 years ago, the administration sent to Congress ten recommendations for Safe Drinking Water Act reauthorization. While the shape of specific recommendations has changed over time, the general principles remain the same. We seek a reauthorized Act that provides responsible regulatory flexibility coupled with stronger "preventive" approaches and funding for systems in need—all of which will improve public health protection.

Currently, over 30 million Americans annually receive drinking water from systems that have violated existing safety standards. Lingering worries over pesticides in river water and emerging threats such as *Cryptosporidium* continue to damage public confidence in drinking water. I know you share my view that we can and must do better, and I believe that S. 1316 moves in this direction.

Before I discuss specific comments on the bill, I want to extend my sincere appreciation to you, Mr. Chairman, and Senators Kempthorne, Baucus, and Reid, for the constructive, consultative process you have conducted in developing your Safe Drinking Water Act reauthorization bill.

S. 1316 represents a product of many months of negotiation and hard work. Throughout this process, you and your staff have shown a dedication to shared goals, and an interest in meeting the concerns of varied stakeholders. I am greatly encouraged by this commitment to build on common ground, which I believe is critical if we hope to regain the bipartisan spirit necessary to reform and strengthen the Safe Drinking Water Act as well as other national environmental laws.

SAFETY STANDARDS

The Committee's extensive negotiations were invaluable in many respects, but none more so than the compromise provision on standard setting. The standard setting framework in the bill provides discretion to consider costs and benefits, but ensures that public health protection remains the paramount consideration.

This is a reasonable, pragmatic expansion of the use of cost-benefit analysis. I believe the authority to consider costs and benefits when establishing future safety standards—within clear statutory constraints allows for improved decisionmaking. This approach achieves the major objective of many stakeholders in the drinking water debate while avoiding an "open-ended" process that many feared could undercut future health protections. In addition, the standard setting framework allows EPA to focus in the future on the most important risks to health without weakening existing protections.

It also requires EPA to take into account the greater risks that some groups, such as infants and the elderly, face from drinking water contaminants. As you know, this summer EPA and the Centers for Disease Control and Prevention released guidance to individuals with severely weakened immune systems. This guidance suggested that such persons may want to take extra precautions to reduce the risks of infection from *Cryptosporidium*. Addressing the needs of groups such as these in the standard setting process is an important consideration explicitly recognized in the bill.

Cost-benefit analysis and risk assessment are useful tools and an essential part of responsible reform. I remain hopeful that Congress will follow your lead when it considers changes to other laws designed to protect our nation's natural resources, human health and the environment.

S. 1316 also builds on the Administration's current efforts to increase consultation with interested parties early in the rulemaking process. This process is currently guided by, among other requirements, the provisions of the Unfunded Mandates Re-

form Act of 1995. However, I am concerned that the new standard setting process in S. 1316 could waste very limited Federal resources. We would like to work the Committee to streamline the analyses and procedural steps included in the bill to ensure that health protections are not unnecessarily delayed and that administrative efforts are not duplicated.

Furthermore, while I continue to strongly advocate the use of improved science at EPA, the bill's sweeping science standard for carrying out *all* aspects of the Safe Drinking Water Act could, I think, cause unintended consequences. For example, it could seriously hinder the Agency's ability to quickly react to emergencies and could impede a whole host of decisions that are not science related. It could also inject inappropriately the Courts into every aspect of scientific desicionmaking in the drinking water program. I hope we can work with the Members of the Committee and other Members of the Senate to improve this provision so that sound, appropriate peer-reviewed science is used to improve public health protection.

Another important component of setting safety standards is the selection of high priority contaminants for regulation. This bill repeals the overly-burdensome current law requirement that EPA regulate 25 contaminants every 3 years. Instead, EPA is required to identify a list of contaminants for study and, every 5 years, determine whether or not a minimum of 5 of these contaminants warrant regulation. Such a selection process strikes a balance between the current mandate to regulate a specified number of contaminants and the policy before the 1986 amendments to the Act under which little action to address health risks occurred.

BALANCING REGULATORY FLEXIBILITY WITH NEW FUNDING AND PREVENTION

In addition to new regulatory flexibility, the negotiating process has produced numerous improvements to current law that will help prevent drinking water problems before they occur. The bill adds new funding for drinking water State revolving funds, it creates a foundation for source water protection, it adds a new provision for system capacity development, and it streamlines enforcement. The Administration has long supported regulatory reforms coupled with stronger prevention measures. Most of these changes were supported in early recommendations by the Administration and I would like to comment briefly on each of them.

State Revolving Fund

The drinking water State Revolving Fund (or SRF) authorized in this legislation represents one of the single most important changes in the nation's drinking water program since passage of the original Act in 1974. Creating a drinking water SRF has been one of President Clinton's primary goals for achieving safe drinking water for all Americans. An SRF is critical to helping States assist communities in upgrading and installing treatment facilities to ensure that they can provide safe drinking water to the public. EPA is currently conducting the first drinking water needs survey, with participation from water suppliers and States. We expect the results of this survey to reveal a tremendous need for facility improvements to allow systems to meet basic safety standards. The majority of States already have passed legislation enabling them to accept Federal capitalization grants for the drinking water SRF, and we anticipate that many States will contribute more than the 20 percent match required in the bill.

The SRF provisions in the bill also provide an interim source of State funding to spur development of important preventive programs, including source water protection and system capacity programs. while funding is needed for these new authorities, I am concerned with the total level of "taps" from the fund earmarked for specific activities, particularly activities that EPA is to undertake. Too many taps from the fund will limit the availability of dollars needed for building a permanent source of revolving funds. I encourage the Committee to consider a fixed cap on the set asides and allow States the flexibility to set spending priorities within this cap. I also encourage the Committee to explicitly link SRF financial support to facility improvements needed to maintain or achieve compliance with drinking water safety standards. Getting SRF moneys to needy systems should be our first priority. We have noted that the bill contains a special authorization for modernization of the Washington Aqueduct; we defer to the U.S. Army Corps of Engineers on this issue.

Source Water Protection

I applaud your efforts to advance community source water protection efforts by providing funds to States for delineating and assessing source water areas. This is an important step toward providing communities with better information on risks to their source waters. With this information, communities will be equipped to take steps as they see fit to prevent pollution from entering their sources of drinking water in the first place.

The overall effectiveness of this source water protection provision, however, could be much reduced by the "petition" program in the bill. The level of prescriptiveness in the provision may limit State flexibility to use the new program to assist localities, thus perpetuating today's somewhat fragmented prevention approaches. The program should provide a better opportunity for communities to receive State assistance in establishing protection programs.

Another program shortcoming is that it is focused primarily on existing contamination problems and not designed to prevent future problems. Pollution prevention can reduce the future costs of treating water "after the fact." While the delineations and assessments are an excellent start, I hope we can continue to work with all of you to find ways to better enable States to assist communities that want to cost effectively prevent future source water problems.

Water System Capacity Development

The capacity development section of the bill contains a very important requirement that States have the legal authority to review system capacity before water systems begin operations. This is a direct way to prevent the formation of future systems that lack such capacity, and I strongly support this provision in the bill.

The second part of the capacity development provision—state strategies for helping existing systems comply—is also a significant improvement over current law. Based on State experiences to date, I believe such programs are an effective way to fundamentally prepare small systems for the future. Although I would have preferred to see in the bill some basic criteria for State programs as a condition for receiving Federal dollars, I believe the bill establishes a sound basis for State programs. I expect this provision to be a success.

Compliance

Finally, I am also pleased that the legislation builds on our efforts to work with systems to improve compliance. Streamlining the enforcement process should not only reduce the burden on Federal resources but also reduce the burden on systems and therefore result in better protection of public health. I am particularly pleased with the improvements in the public notice provisions of the Act. Informed and involved citizens can be strong allies of water systems in taking effective actions on pressing problems.

SPECIAL NEEDS—SMALL SYSTEMS

Nearly 90 percent of community water systems in the United States serve fewer than 3,300 people. However, despite the large number of small systems, they serve just 10 percent of households nationally. Current safety standards and water system practices are often difficult to tailor to these small systems.

This bill provides new approaches that are necessary to ensure safe drinking water in small communities. In addition to the capacity development provision which will provide needed technical assistance to small systems, the bill provides considerable new flexibility for States to establish monitoring requirements (for all systems) and provide more time for systems to meet safety standards if necessary. The variance provisions have also been improved to allow more efficient administration by the States.

These are important new flexibilities that, coupled with the SRF and other prevention approaches, provide significant new tools for addressing small system concerns.

THE FUTURE OF THE DRINKING WATER PROGRAM

We need to do more to protect drinking water safety, focusing on the greatest health risks and taking the most cost effective actions to prevent problems. As part of the Administration's reinventing government initiative, EPA began last year to undertake a redirection of the drinking water program to achieve these goals.

As a first step, EPA conducted a series of public meetings to obtain stakeholder's views and suggestions. Improved drinking water protection in the future depends on the success of partnerships between local water suppliers, the States, EPA, and other Federal agencies, including the Centers for Disease Control and Prevention and land management agencies in the Department of Interior and the U.S. Department of Agriculture. We feel we've made considerable progress in this Administration in improving access to EPA decisionmaking and I am pleased that S. 1316 will help us continue to move in this direction.

Another component of our redirection effort is to develop a broader agenda to conduct research on the comparison, characterization and control of risks associated with drinking water contaminants. Accurate human health effect and exposure data

are critical for reliable risk assessments. I believe that this bill builds on this effort by investing in the future through increased research funding.

However, I am concerned that the proposed severe cuts in EPA's budget will undermine this investment and reduce EPA's ability to take advantage of the bill's new flexibilities designed to benefit States and local water suppliers.

Adequate funding is particularly important if we hope to maintain the delicate balance between needed regulatory improvements and prevention currently represented in the bill. It is imperative that the public health protections are not weakened in this bill or through the appropriations process.

CONCLUSION

I would again like to commend the Committee for undertaking needed reforms to the Safe Drinking Water Act in a common sense, consensus building process. Thank you for the opportunity to comment on this important legislation and I look forward to working with the Committee and other Members of the Senate in the coming weeks to address the concerns I have raised and to secure reauthorization of the Safe Drinking Water Act.

STATEMENT OF RICHARD J. BULL, SENIOR STAFF SCIENTIST, BATTELLE PACIFIC NORTHWEST LABORATORIES, RICHLAND, WA

I am Richard J. Bull, a Senior Staff Scientist at the Battelle Pacific Northwest Laboratory. My interest in the issues before you does not stem from my present employer, but from 14 years of research experience in the area at the U.S. Environmental Protection Agency and an additional 10 years in academia. I continue to have research interests in the area.

My principle concern is the translation of scientific information into public policy in the drinking water arena. While I am very much a proponent of quantitative risk assessment, I am disturbed when extrapolation is built upon extrapolation and the outcome of the process does not meet the basic tenets of common sense. You are considering issues surrounding the production of byproducts in the disinfection of drinking water, questions that could mandate the removal of naturally occurring arsenic from drinking water sources in the Western U.S. and mitigation of risks from radon exposure.

I strongly support the provision of Section 4 that repeals the previous requirement that 25 contaminants be reviewed for regulation under the SDWA every 3 years. In my view the previous reauthorizations of the SDWA essentially insured that the Agency could not focus on problems in drinking water with its limited resources, but instead focuses on secondary and tertiary problems associated with other programs (e.g., CERCLA). Moreover, this costly diversion puts into place processes which allow parties that have liabilities under these other laws to escape risk-based evaluations for frivolous reasons (e.g., a practical quantitation limit in drinking water is not a problem when measuring the contaminant in a hazardous waste site). There are problems that are more important in drinking water safety than abstract and rare exposure to chemicals from hazardous waste sites.

I find the fact that this bill focuses on problems specific to drinking water refreshing. Resolution of health risk issues around waterborne infectious disease, disinfectant by-products and arsenic go directly to the political responsibility held within each community for the provision of a safe drinking water source. This approach takes traditional considerations of public health into account more explicitly than prior reauthorizations of the SDWA. In this regard, I particularly appreciate the provisions allowing the administrator the discretion to consider competing risks that may be increased as the result of a specific regulation and whether the benefit obtained from a regulation cannot justify the costs it imposes.

The first intent of centralized facilities for delivering drinking water is to prevent the spread of waterborne infectious disease. Treatment of water with reactive chemicals is the most cost-effective means of dealing with such problems and it may be the only one that can be applied effectively in many smaller systems. There is no doubt that these processes create "hazardous chemicals" as by-products when they are applied to drinking water. In one case, chlorination, epidemiological data suggests that these by-products pose a risk of cancer to humans. However, it is not clear that these by-products are present in sufficient concentration to cause cancer. Nor is it clear what by-products might actually be responsible for the cancers identified in humans or how these risks vary by location throughout the country. This is one case in which national regulations could actually result in increased cancer risk as well as increased risk from waterborne infectious disease. One of several examples of how this could play out is described below.

By-products of chlorination vary by location. This variability is due largely to natural variation in the properties of the water being treated. There is a growing body of scientific evidence which suggests that chlorinated by-products resulting from chlorine treatment present very little, if any, risk at the low concentrations that occur in most drinking waters. However, brominated byproducts resulting from chlorination of water containing naturally occurring bromide ions are emerging as more potent carcinogens in animal studies and they appear to affect the same organs in animals as in humans. This is in sharp contrast to the liver and kidney cancer found with chlorinated compounds. This is important because alternative disinfectants to chlorine (e.g., ozone) produce brominated by-products. Current regulatory strategy for disinfection by-products names total trihalomethanes and total haloacetic acids as the most significant parameters. These measures are dominated nationally by chlorinated by-products. Potentially, a regulation may be put into place that looks good politically, but does absolutely nothing to protect the public health. In this example, it would in fact reward those processes that result in by-products presenting the greater hazard (i.e., those that are brominated).

A second problem created by this unreasoned focus on chlorinated by-products is that it allows processes to be introduced into the market place without adequate study of their by-products. The first principle is that any chemical or physical process that damages organisms will also result in by-products. It is imperative to find that process which first deals effectively with waterborne infectious disease, but also produces a lesser hazard from by-products. The second principle is that the hazards associated with one process are not the same as those which would result from the standard process (i.e., different by-products should be expected).

I endorse the provision for postponing the regulation of arsenic in drinking water until a research program can be completed that resolves the risk issues. These issues have been defined and the basic direction research should take to resolve them has been clear for 25 years. There have been explicit recommendations from EPA's Science Advisory Board over the past 10 years to help resolve these issues. The problem with these recommendations has been that the timeframe given to resolve them has always been too short. Therefore, research has progressed piecemeal and has not been properly directed or focused. If the time lines allowed 25 years, 10 years and 4 years ago had been defined by the necessity of organizing and conducting a directed research program that was held to specific deadlines, this problem would have been resolved.

These amendments also appear to provide a better context for the regulation of radon in drinking water. Regulation of radon in drinking water at levels significantly below ambient exposures defies common sense. There are problems within the risk assessment itself. However, sidestepping that issue, one can easily determine that the regulation provides a very small increment of protection to the population that is actually at risk. Radon occurrence in drinking water usually accompanies exposure to radon from other sources (e.g., basement air). These other sources of exposure are generally at least an order of magnitude larger than those arising from drinking water. When attention is specifically focused on those populations at risk from radon, it is clear that treatment of their drinking water only marginally decreases overall exposure and thus has a minimal beneficial effect on the health of this population. One may derive an apparent benefit by expressing this in terms of numbers of lives saved, but this is a diversion from the real threat from radon, if the risk assessment is correct.

As a researcher, I strongly support the provisions of this amendment for properly directed research. It is important to recognize that only the Federal Government has the resources and expertise to deal with national problems of this complexity and involve public trust.

STATEMENT OF GURNIE C. GUNTER, DIRECTOR, KANSAS CITY, MO, WATER SERVICES DEPARTMENT ON BEHALF OF THE ASSOCIATION OF METROPOLITAN WATER AGENCIES

Mr. Chairman and Members of the Committee, it is a sincere pleasure to be with you today to present testimony on S. 1316, the "Safe Drinking Water Act Amendments of 1995."

My name is Gurnie Gunter and I serve as Director of the Kansas City Department of Water Services which provides drinking water to over 600,000 people. My agency was one of the founders of the Association of Metropolitan Water Agencies and I am very pleased to be able to present this testimony on AMWA's behalf.

The Association is comprised of the managers and directors of the nation's largest municipal and publicly-owned water systems collectively serving over 95 million people—40 percent of the nation's population served by public water supplies. The

Association has always been at the forefront of efforts to protect public health through the provision of safe, affordable drinking water.

On behalf of the Association, I would like to express our sincere appreciation for all of the effort that has gone into bringing the Safe Drinking Water Act reauthorization bill to its present point. I would like to commend all of the members of the Committee who were instrumental in the development of S. 1316, but I particularly want to thank Senator Chafee, Senator Kempthorne and Senator Baucus. You have worked hard to ensure that this very important legislation reflects the needs of the public and the water supply community. I would also like to say for the record that the work of your excellent staff, particularly Jimmie Powell, Meg Hunt, Buz Fawcett and Jo Ellen Darcy, could not have been of a higher quality nor more professional.

GENERAL

The 1986 amendments to the SDWA were legislated, in large part, in reaction to the slow rate at which EPA was issuing standards. As might be expected, the new requirements were very prescriptive. The 1986 law specified exactly how contaminants were to be handled, which contaminants had to be regulated, and by when. The objective was more regulations, and quicker. It was thought that this prescription would lead to improved public health protections for the American public. In some cases it has. The Surface Water Treatment Rule, the Lead and Copper Rule, and the Phase I Volatile Organic Chemical Rule stand as examples of regulations that address public health concerns. In many more cases, however, the "more and quicker" focus has actually stood in the way of improved public health protection.

Twice, when promulgating regulations governing the majority of the 83 contaminants required to be regulated under the 1986 Amendments, EPA acknowledged that the common denominator for most of the contaminants was that they rarely occurred in drinking water and seldom at levels of public health concern. Water systems have since been required to spend tens, if not hundreds of millions of dollars testing for a variety of contaminants even when EPA projected that no systems were ever likely to violate the standard.

Moreover, regulations were often based on the sketchiest of data. Because of mandatory and court-ordered deadlines, the agency would issue regulations without adequate information on what the actual costs to drinking water consumers might be or what benefit they might receive for what they were being required to pay.

The 1986 law is easy to follow: simply push the regulation out the door, even when the expenditure of minor sums to obtain better health effects data could have saved many of the nation's families thousands of dollars—or at least assured them that their money was being spent on a wise Federal Government program. Perhaps most important, it has become apparent that contaminants of greatest risk are not being addressed under the "more and quicker" scheme.

There are clearly some significant problems with the current law that need to be fixed. We highlight a few of the problems here because there will be some who will insist that the changes to the SDWA envisioned in S. 1316, or indeed any change to the status quo, will "undermine or roll back important public health protections."

Few would disagree that the goal of the 1986 Amendments to the Safe Drinking Water Act was to protect public health. The regimented approach and the "more and quicker" focus of the Amendments, however, did not serve that purpose well. S. 1316 significantly improves the current law and increases the likelihood that contaminants of real concern to the public in drinking water will be addressed.

SDWA REAUTHORIZATION GOALS

Mr. Chairman, AMWA believes that everyone's short list of SDWA reauthorization goals should include:

- Ensuring That Drinking Water Standards Address The Highest Priorities For Risk Reduction

Addressing the highest priorities for risk reduction may seem like common sense. In other public health areas, more resources are devoted to AIDS, cancer, and heart research than to, the common cold, athlete's foot, and upset stomachs. All resources are finite, and application of finite resources must be prioritized to achieve the greatest good. The present drinking water law however, does not allow for this to happen.

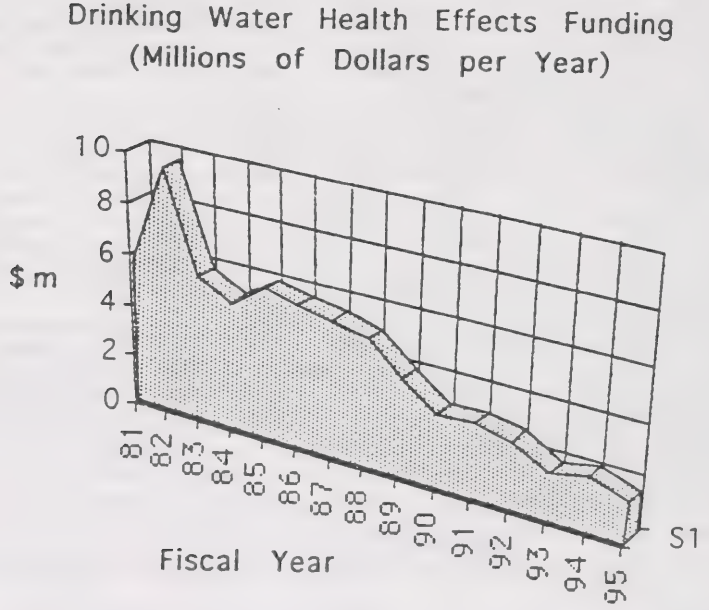
S. 1316 makes the prioritization of risks a part of the Act for the first time. It eliminates the requirement for the regulation of 25 contaminants every 3 years, and replaces it with a process to identify and study potential contaminants for regulation based on their occurrence in drinking water and the severity of their risk to public health. This is a very positive step forward.

• Utilizing Solid Science As A Basis For Standards

To set appropriate priorities for action, it is necessary to have a solid scientific foundation. Solid science is also needed to insure that appropriate standards are set. S. 1316 puts in place, again for the first time, a process by which good public policy decisions can be made. The bill provides for use of sound science, adds the flexibility to make decisions that make sense, and places before the public all the facts and uncertainties and seeks their input before a final decision is made. The bill requires that sound science be used both in selecting future contaminants for regulation 'and in the standard setting process. We strongly support S. 1316's advances in this area.

• Providing Adequate Funding For Health Effects Research

Sound science, particularly in the health effects area, is predicated on adequate funding to pursue needed research. As requirements to regulate drinking water contaminants have grown dramatically, EPA's health effects research budget has decreased precipitously. Despite the quadrupling of the number of contaminants regulated as the result of the 1986 amendments, funding for health effects research has dropped continuously from a 1982 level of almost $10 million to this year's all time low budget of $1.6 million.



S. 1316 recognizes the urgency of providing more funds for health effects research by targeting $10 million from the State Revolving Fund for research on disinfectants and disinfection byproducts, *Cryptosporidium*, arsenic and sensitive subpopulations. These funds will help to ensure that money is available now to address these contaminants and to study their impact on specific segments of the population.

Members of the Committee, we commend you for this action and would like to work with you in any way we can to ensure that the funds are made available for this purpose.

- Granting EPA The Flexibility To Make Good Public Policy Decisions And Acknowledging The Fact That Mandated Treatment And Technology Shifts Can Introduce Competing And/Or Substitutional Risks

In order to make use of the best science, EPA must be given flexibility to set drinking water standards at levels that make sense from a public policy perspective. While some may argue that the current standard setting process is not broken, the proof is obvious when addressing Disinfectants and Disinfection Byproducts in particular.

S. 1316 takes a cautious, but significant, step in providing standard setting flexibility. The bill maintains the present standard setting process but allows, in certain cases, an alternative standard to be set considering risk-risk tradeoffs, and the costs and benefits to large systems.

S. 1316 includes acknowledgment of risk-risk tradeoffs in two areas. It does so by preserving the negotiated agreement on Disinfectants and Disinfection Byproducts, and by allowing risk-risk tradeoffs to be considered when determining appropriate maximum contaminant levels.

Disinfectants are used to reduce the risks from microbial contaminants in drinking water. Disinfectants, however, can also combine with naturally occurring material in drinking water to form chemical byproducts some of which are classified as probable human carcinogens or have the potential for other adverse health effects.

Reducing the use of disinfectants to reduce byproduct risk could significantly increase microbial risks to consumers. Conversely, increasing disinfection to reduce microbial risks could increase chemical risks. Changing to different types of disinfectants could reduce the byproducts presently suspected to cause problems, but would generate their own set of different byproducts whose potential health impacts have not been studied and could be as significant or more significant than the risks avoided.

S. 1316 acknowledges the critical need for health effects, occurrence, and technology research to support informed decisions in this area. It does so by authorizing for the first time adequate research funding to resolve the many uncertainties involved. It does so by accommodating the significant delay already experienced in promulgation of the Information Collection Rule which will gather data crucial for future steps. And it does so by preserving the time intervals between the various elements of the negotiated agreements—time intervals that are critical for conducting research and data collection, compiling and analyzing the information, and deciding appropriate directions for subsequent elements.

Mr. Chairman and members of the Committee, I cannot stress enough the importance of risk-risk considerations in the Disinfectants and Disinfection Byproducts rulemaking package. We commend you for your thoughtful consideration of this very complex issue.

The bill also preserves wording from the 1986 Amendments that designates granular activated carbon, or GAC, as "feasible" for the removal of synthetic organic chemicals. It is now known that there are such chemicals which GAC does a poor job of removing. It is also known that microbial contaminants can colonize' fine particles of GAC and pass into the public's drinking water. The GAC then serves to protect these microbes from disinfection.

It is also known that GAC exhibits preferences for different contaminants and can collect and concentrate one contaminant and then release it to water supplies without warning when another, more preferred contaminant is present. The nature and degree of these microbial and chemical risks involved with the use of GAC are poorly understood but could be significant.

The use of GAC, therefore, involves risk-risk type tradeoffs of the very type that the Act for the first time would acknowledge. We would encourage you to consider requiring a complete scientific assessment of the nature and seriousness of the risks that use of GAC might introduce.

- Securing The Public's Right-To-Know

Setting priorities, funding, using good science, and providing flexibility for EPA will provide a great deal of information that should, as S. 1316 requires, be placed before the public for their information and education.

The public has a right-to-know what benefit they will receive from a Federal mandate, particularly when they are required to pay directly through their water bills for that benefit. S. 1316 requires providing the public comprehensive and understandable information on the public health risk to be addressed, the benefits that the public is expected to derive from the risk reduction provided, and the costs the

public will bear for these benefits. More importantly, S. 1316 requires that the public be given information on these risk reduction benefits and costs at various regulatory levels.

Public education and involvement is a key element for good public policy decisions, and helps to assure public support when those decisions are implemented locally. We commend the Committee for moving in this direction.

• Establishing More Reasonable Compliance Timeframes

Another important improvement made by S. 1316 is the change in the current law's 18 month effective date for regulations. When major capital construction is required to comply with a standard, it can take more than 18 months just to get the necessary environmental and other permits necessary to start construction. The entire construction process including issuing bonds or obtaining other funding, design, permitting, construction and startup can take 5 years or more.

S. 1316 would allow the Administrator to establish effective dates of up to 3 years on a rule by rule basis. Additional extensions of up to 2 years may be granted when capital improvements are involved in compliance. This is a major improvement over current law and we support the bill's provision.

• Granting States Increased Flexibility In Public Notice Determinations

Throughout S. 1316, there are a variety of initiatives intended to foster an improved State/Federal partnership in development and implementation of drinking water programs. AMWA strongly supports these new directions. Since many drinking water issues can be highly site specific, decisions by those closest and most knowledgeable of local problems will be better decisions.

• Preventing Pollution From Entering Drinking Water Sources

Preventing pollution from entering drinking water sources may seem like a relatively simple task but, as you know, can be quite difficult due to the number and nature of pollution sources. S. 1316 makes a start at addressing this problem by providing a framework and authorizing funds for source water quality protection partnerships.

• Providing Funds For Drinking Water Infrastructure Improvements

S. 1316 establishes a loan program to provide funds to communities for drinking water improvements. The bill provides $600 million for fiscal year 1994 and $1 billion for fiscal years 1995 through 2003. AMWA supports the State Revolving Fund but would like to urge the Committee to review the priorities established under the bill to ensure that the needs of city water suppliers are appropriately considered.

SUMMARY

Mr. Chairman, when you laid out your thoughts on reauthorization of the Act 8 months ago to AMWA members you described how difficult it could be to craft a bill. You also noted that major reforms to the SDWA were needed, and failure to pass a bill would lead to "wasted effort carrying out the mandates of the current law."

S. 1316 goes a long way toward reform of the Safe Drinking Water Act and much to the Committee's credit, incorporates a consensus of views, while stepping back from prescriptive formulas, and moving toward a clear public health focus and the flexibility to make informed public policy decisions. AMWA strongly supports the directions taken by the bill.

Again, Mr. Chairman, I would like to thank you and Senator Kempthorne for your leadership on this bill, and thank all of the members of the Committee for their consideration and hard work in this effort.

STATEMENT OF DAN KEIL, MONTANA RURAL WATER SYSTEMS ON BEHALF OF NATIONAL RURAL WATER ASSOCIATION

Mr. Chairman, Senator Baucus, and Members of the Committee. On behalf of all small and rural towns, I appreciate the opportunity to testify before the Committee on S. 1316. My name is Dan Keil, I live on a wheat farm in North Central Montana—this is a sparsely populated area 60 miles east of the Rocky Mountains and 60 miles south of the Canadian Boarder. Back in the 1970's, President Nixon went to Moscow and signed the SALT I agreement. As a result of this agreement, military construction of an anti-ballistic missile complex near my farm was canceled. One of the main components of this missile complex was a water system. With the closeness of the complex, the farms in the area organized and obtained this water system for the benefit of the community. We constructed a distribution network of over 700 miles of pipeline to supply fresh drinking water to over 300 farm families in an area

approximately 40 males by 60 miles. Prior to the development of our water system, all of the families hauled water up to 30 miles to our cisterns and collected runoff from our roofs. Today, we have just over 300 families on the systems who pay an average of $65 month.

In addition to serving on my water system's Board of Director, I serve on the Montana Rural Water Systems Board. Montana Rural Water has a membership of over 380 small communities all with less than 10,000 persons. Each year our Association's works onsite with over 1,000 small communities with water and wastewater needs including: SDWA and CWA compliance, maintenance, operations, operator training, pollution prevention, building new treatment, adjusting water rates, and long term planning. In additional to Montana Rural Water, I am representing the 47 other state rural water associations that make up the National Rural Water Association.

While you know very well the make up of your state, I would like to identify some facts regarding the country's small community water systems.

FACTS ON SMALL COMMUNITY WATER SYSTEMS

- 53,335 of the 56,747 community water systems in the country, 94 percent, serve population of less than 10,000 persons.
- In Montana 688 of the 694 community water systems serve less than 10,000 persons and there is not one system larger than 100,000 persons. In Rhode Island 82 percent of systems serve less than 10,000. In Idaho, 789 of the 800 community water systems serve populations less than 10,000.
- The small water systems make no profits, are locally governed by rural citizens whose families drink the water, and were built to improve public health by eliminating the use of contaminated wells, shallow wells, streams, bogs, or cisterns as their drinking water source.
- Currently more than 1.1 million rural Americans live in homes without piped water. The primary reason these 405,855 families don't have water is—they can't afford it.
- Due to communities of scale, families in Montana on rural water systems often pay over $80–$100 a month for service.

Currently, the Safe Drinking Water Act: (1) sets drinking water standards to be met by over 56,000 community water systems; and (2) overly prescribes how states and community water systems must operate which includes mandated monitoring schedules, public notification, surface water treatment, groundwater disinfection, etc. This Federal role in directing state and local activity is what has become overburdensome and oppressive to small and rural water systems. Excessive Federal operating mandates dominate the use of finds and the management time of small communities. In the long run this has an adverse impact on public health because systems are not able to concentrate on their own public health priorities for system operation. The more EPA dictates the less actual management and protection of the immediate public health concerns is accomplished. For example, the cost of monitoring for Phase II/V is estimated to be as much as $13,000 per source. For small systems this is a severe burden, however much of the monitoring required by the regulations is unnecessary.

S. 1316 IMPROVES THE CURRENT LAW

If enacted, the bill would improve the current law's public health regulation of the nation's small communities' water systems by reducing unnecessary regulations and better focus regulation on priority threats to public health. S. 1316 is a moderate-compromise approach to SDWA reauthorization. While we believe that there is a need for an even more comprehensive revision of federally dictated requirements on small systems—we do support S. 1316 and the improvements it makes to the current law and we greatly appreciate the bipartisan cooperation and assistance to small towns from all of the Members of the Committee.

Some Priority Small Community Improvements in S. 1316:

- Monitoring, the most severe burden on small systems is the high cost of monitoring for contaminants that have long term health effects and are rarely found. A NRWA 1994 report highlighting the impacts of two SDWA regulations on small and rural communities found that much of the monitoring required by the regulations is unnecessary. The report shows that rural communities will spend over $639 million for redundant monitoring by 1996. In order to comply with these regulations 80 percent of small communities surveyed will be forced to eliminate: plans to hookup more families; routine maintenance and improvements; pollution prevention; additional training for the system's operator; im-

provements to water treatment; operation and maintenance; staffing; and the operation of wells. *S. 1316 Improvement:* Monitoring is determined by the state with consideration of the local conditions and the uniqueness of region and state. EPA retains oversight and the full capacity to intercede when EPA perceives it to be necessary. In short, it changes EPA's role from command and control to oversight and assistance to states and small communities EPA estimates the cost for Phase II/V monitoring to be over $13,000. S. 1316 could reduce monitoring by 75 percent for small systems. We estimate that 25 percent of Idaho's small communities did not comply with the 1993 Chafee Lautenberg monitoring relief and therefore will have to complete four samples of Phase II/V monitoring in 1995.

- Technical Assistance (TA), in Montana and other states, on-site technical assistance is the backbone of small system compliance. S. 1316 provides $15 million for small system technical assistance which is an increase of $5 million over the current level. Small systems have the most difficulty complying with the SDWA—they have the limited budgets to operate their systems and comply with the SDWA. Allocating a small portion of overall Federal spending on drinking water to TA, results in a growing number of small systems moving into SDWA compliance. TA is the only contact the great majority of these systems have to help meet the Safe Drinking Water Act requirements. TA has proven to be more effective and is less costly at solving compliance than enforcement policies. It also promotes grassroots support of the law and promotes local initiative. Because state drinking water agencies are also regulating agencies, technical assistance administered by the regulatory agency often does not reach the smaller more vulnerable rural water systems. It is operated by the small communities and not EPA. We strongly urge the inclusion of the $15 million authorization for TA in the final bill.
- No Additional Unfunded Mandates, S. 1316 does not include any new Federal regulatory programs for viability, certification, etc. To have additional minimum small system requirements on management or operations gives EPA an open door to extensive Federal interference in state and local water system decisions. Small towns believe that all community water systems (CWS) must meet health-based water quality standards. If they cannot or are not in compliance then they are not viable. However, viability, or the way a system operates in order to meet standards, should not be subject to a Federal one-size-fits-all regulatory definition. Rural consumers have to pay for all the good ideas that come out of Washington. Allowing local governments to retain control over the operations of their systems will ensure that SDWA compliance in the most economical way. Giving the Federal bureaucracy authority over management and operations of local municipal water systems gives the Federal bureaucracy authority to raise rates over the objection of the paying consumers.
- Increased Pollution Prevention Opportunities, S. 1316 allows the technical assistance funding to be used for rural water wellhead groundwater protection programs. This program has been the most successful drinking water pollution prevention program in our rural communities. Prevention is much less costly than remediation and provides for a better environment for all citizens. This program operates for a fraction of the cost of command and control programs. In states that have the groundwater protection program, it has been dramatically successful. Over 2000 groundwater/wellhead protection programs have been adopted in rural communities. The most immediate way to protect groundwater aquifers is through this type of local protection and through local enforceable programs. The program needs to be expanded using the 1442(g) $15 million funding.
- State Revolving Loan Funds for Disadvantaged Communities, S. 1316 allocates 30 percent of the amount of the annual SRF grant to public water systems that meet disadvantage criteria. This will ensure that SRF funds make it to the most needy communities.
- New Processes for Determining Radon, Sulfate, and Groundwater Disinfection Regulations, S. 1316 allows for increased consideration of public health benefits when determining Federal standards. This improvement will focus small community's limited resources on concerns that will result in the greatest benefit. The bill included a more common sense approach for these specific regulations.

We believe that this bill initiates a new approach to the Federal regulatory relationship with small and rural water systems. The greater emphasis on technical with the $5 million increase in technical assistance funding is a major step in that direction. The reliance on states to simplify and streamline monitoring and other requirements will greatly improve small community compliance with the law. We are eager to work with the Committee and EPA to expand and extend this enlight-

ened approach to regulation and enforcement of the SDWA in rural areas. We appreciate the work done by this Committee to make the new direction possible.

SUGGESTED IMPROVEMENTS TO S. 1316

Small communities would like even greater flexibility in operating programs to protect their drinking water. The best possible bill for small town America would empower small and rural communities to actually decide how much they need to spend on their public health. Who is better to decide how much a community can afford than that community. Transferring this authority to the Federal bureaucracy is at best inefficient and at worst illustrates an arrogance that only EPA has the best solution. Rural consumers have to pay for all the good ideas that come out of Washington. The more local governments retain control over the operations of their communities the more they are ensured that they will get the most public health in the most economical way. Giving the Federal bureaucracy authority over operations of local municipals gives the bureaucracy authority to raise rates over the objection of the paying consumers. We strongly believe that people paying for the service should have control over how their funds are spent.

Having said that, we also realize the need to compromise in order to move an improved reauthorization bill. This is why we support passage of S. 1316. We support the compromise agreements on controversial issues such as viability and standards setting in order to pass a bill.

However, to significantly improve S. 1316 implementation in rural communities without violating the agreements on key provisions we recommend consideration of the following modifications to the bill.

Section 3 (State Revolving Loan Funds)

In the SRF technical assistance is only available if the annual SRF grant exceeds $800,000,000. Also the amount of technical assistance available in the SRF is capped at 2 percent of the annual SRF grant or $10,000,000. *Technical assistance is the small community priority funding in the SRF. Removing these two limitations would ensure the SRF is best utilized by small communities.*

Section 10 (Filtration and Disinfection)

Provides that at the same time as EPA proposes an Interim Enhanced Surface Water Treatment Rule, EPA shall describe treatment techniques that meet filtration for the ESWTR. *There is 110 similar requirement for EPA to quickly list affordable technologies for SWTR, which is the priority regulation requiring a list of small system technology. EPA should list small system technology for the SWTR immediately.*

Section 12 (Small Systems Technology)

Provides that EPA shall list "all" technologies available to small communities. Currently states have authority to approve BAT not specified by EPA. S. 1316 gives authority to approve "all" technologies to EPA. *States should be allowed to retain current flexibility—"all" should be "any."* Point of Entry (POE) treatment is not included as a small systems technology. *In some cases POE treatment may provide adequate protection of public health and can be very cost effective. POE should be included as a technology.*

Section 14 (Exemptions)

The granting of an exemption is only available for a limited time after the promulgation of a regulation and would not be available to a hardship system contaminated in the future. *This should be modified to allow for an exemption for a community in the future.*

Section 14 (Surface Water Treatment Rule Exemptions)

A special exemption should be provided for all contaminants including the Surface Water Treatment Rule SWTR in extreme hardship cases. We have personally witnessed communities having to triple water rates to pay for surface water treatment in towns with many low income families, many living on fixed incomes. It seems unfair that rural families often have to pay more than double in rates of large towns to meet standards based on affordability. Sharp increases in utility bills can be a threat to public health because they often force low income families to sacrifice basic necessities. The only towns that have not complied with this requirement are the smallest and poorest towns. While we agree that communities using surface waters should treat their drinking water, many of these towns have been drinking their water for decades without an incidence and don't understand the urgency to meet an arbitrary deadline to install costly treatment. *Hardship communities should be provided additional flexibility, an extension from the current arbitrary deadline for*

compliance, and an improved process for approving more cost effective types of treatments. Providing additional time for hardship towns to comply with the SWTR will create an incentive to find more affordable technology. Currently, there is no incentive for regulators and engineers to approve cost-effective technology. As soon as an affordable technology could be identified, the exception would be terminated. In addition, an, extension will allow communities time to use any new state revolving funds and increased regulatory flexibility a-proposed in the SDWA reauthorization.

(Section 14) Variances

S. 1316 provides for new EPA regulations on Federal requirements for approval of a variance including operator certification, installation and proper operation of treatment technology, and financial and technical capability requirements. *This variance section is very cumbersome and will be rarely used. The new Federal requirements make this section more burdensome than current law.* The granting of a variance is only available for a limited time and for limited contaminants. *These provisions also limit state authority.*

Section 6 (Enforcement)

Provides for EPA with increased authority to enforce additional sections of the law including sections 1415 and 1416. It also removes one level of judicial review a community has in the current law. *Both of these provisions are an unnecessarily expansion of EPA enforcement into local and state operation.*

Section 6 (Consolidation Incentives)

This section allows for a community to be exempt from SDWA fines if a community chooses from limited compliance options. However by limiting the compliance options that exempt the community from fines the community is limited from choosing the best compliance option. This will force the community to choose an option that may not be in the best interest of the rate-payers. *The options available for a community to be exempt from fines should be the same as State Revolving Loan Funds) Restructuring exemptions. 1473(b)(3)(B) RESTRUCTURING.—A public water system described in subparagraph (A) may receive assistance under this part if—"(I) the owner or operator of the system agrees to undertake feasible and appropriate changes in operations (including ownership, management, accounting rates; maintenance, consolidation, alternative water supply, or other procedures) if the State determines that such measures are necessary to ensure that the system has the technical, managerial, and financial capability to comply with the requirements of this title over the long term; and "(ii) the use of the assistance will ensure compliance.*

THE ACTUAL CONDITION OF SMALL WATER SYSTEMS

Small water systems have dramatically improved public health conditions in rural America. You have heard environmental groups detailing the number of SDWA violations. In small systems the great majority of these violations are administrative not serious threats to public health.

The number of community water systems in the country has decreased 8 percent over the past decade and is still decreasing as small systems merge or share water to meet the SDWA requirements. Consolidation is occurring under existing regulatory and market pressures.

Only 1.5 percent (757 systems) of the community water systems serving 3,300 or fewer population are significant non-compilers (SNCs) of the microbiological and turbidity requirements. Furthermore, only 0.85 percent (421 systems) in the same category are SNCs of the chemical and radiological requirements. Most of the SNCs are for procedural violations for failure to properly monitor and report—these are not directly related to public health, yet this is a non-problem EPA wants to build a costly national viability program to solve.

EPA's compliance report indicates that States are resolving the SNC problem. In 1994 States resolved 72 percent of the microbiological and turbidity SNCs and 83 percent of the chemical and radiological SNCs. States are resolving the problems mostly through training and technical assistance and without the need for additional legislative solutions.

Only 2 percent of the small community water systems are listed as being in significant non-compliance under the SDWA (the same percentage as the largest systems). Of these over 85 percent were brought into compliance last year. Of the 2 percent, there were no more than a handful with immediate risk to public health.

Of the 160 significant noncompliers with chemical MCLs, 83 percent were resolved through the current process in 1994. Obviously many compliance options outlined in the article will take significant time to acquire funding, rates increases, and

install infrastructure. Some systems will not be able to afford any option including consolidation and should be candidates for a variance.

Minnesota: Minnesota's water supplies are relatively free of pesticides and industrial contaminants, the Minnesota Department of Health said April 28, 1995. The department performed nearly 125,000 tests for individual SDWA contaminants. NRDC has said that as many as 50 million Americans faced serious health risks because of unsafe drinking water. The group estimated 650,000 Minnesotans were exposed to unsafe drinking water, based on 565 reported violations of Federal Environmental Protection Agency regulations. State officials criticized the council's methods and said that all but 46 of the violations were related to recordkeeping, monitoring and reporting. None of the test results for 1994 exceeded the maximum contaminant level for any given chemical.

Maine: Within a 6-week period, Maine Rural Water Association organized and collected water samples from 271 water systems serving less than 3,300 persons around the state. In a total of 14,000 possible contaminants, one exceedance of an MCL was detected, that being for benzene, a volatile organic chemical. In a subsequent retest, the benzene dropped to a trace level.

Florida: In this compliance cycle, 7,100 public water systems in Florida tested for over 85 contaminants. Of the over 600,000 tests, 36 systems had contaminants above the MCL. All these 36 systems took the necessary steps to reduce the contaminants to acceptable levels. This data is reported from the Florida Department of Environmental Protection.

WHAT TYPE OF REGULATORY STRUCTURE WORKS IN SMALL TOWNS

The problem with the SDWA is that the existing Federal-state enforcement structure is not working with small and rural water systems. Costs begin to significantly increase for both the Federal and state bureaucracies and for small water systems when the requirements and enforcement mechanisms for larger systems are applied to the smaller systems. Any significant benefit compared to the cost of rural water onsite technical assistance can be measured in small water system compliance. Two points are important: the existing use of growing Federal and state SDWA bureaucracies are and will be more expensive; and simplifying rules and providing onsite assistance can document the compliance status for every small system affected by the law and can set forth a system by system program to maintain compliance.

The command and control strategy that has worked for larger cites has not worked with small water systems. In fact, the entire EPA experience with environmental protection enforcement is only marginally applicable in working with over 56,000 smaller water systems. Small water systems were created out of necessity to reduce public health risk from water supplied by cisterns, shallow wells and small streams. These are not the type of institutions that EPA and state environmental offices can efficiently cover with the existing bureaucracy.

Small water systems will not go away. Neither Congress nor EPA will shut off a community's water unless there is a direct public health threat. Consolidation is taking place but geographic restrictions will limit this as a long term solution. The only real answer to solving the problem with small system compliance is to directly assist these small systems in developing their own approach for being in compliance. The smaller and more remote the system the greater the potential problem, and the more difficulty the Federal and state bureaucracies have in enforcing sustained compliance.

For Example

The Vermont Compliance Initiative brought 240 small systems back into compliance in a matter of months. 95 percent of systems out of compliance returned to compliance. All if this was accomplish for $6,000 a month which included travel.

In the Pennsylvania Compliance Initiative, all but two of 17 out of compliance systems receiving technical assistance returned to compliance in a matter of weeks. Technical assistance included: (1) education on SDWA regulations; (2) assistance optimizing treatment; (3) assistance with treatment upgrades; (4) and assistance on restructuring. The two systems not returning to compliance did not have water contamination, rather they had paperwork violations. These two systems DON'T NEED EPA TO ASSESS THEIR VIABILITY—THEY NEED AN ENFORCEMENT ACTION TAKEN AGAINST THEM.

In the Florida Compliance Initiative, all systems receiving technical assistance returned to compliance. In this project the 30 violators in Hillsborough County received technical assistance in a 1 year period. Through technical assistance average cost to return the systems to compliance was approximately $60.00 per violation. An enforcement program would have cost much more considering the costs of fines, lawyers, court costs, and administrative costs.

In Montana, Rural Water Provided the Following Communities with On-site TA Last Year

Absarokee, 320 Homes
Alberton, 140 Homes
Anaconda, 2991 Homes
Angel Island, 60 Homes
Ayres Colony, 15 Homes
Bainville, 106 Homes
Baker, 800 Homes
Bear Creek, 24 Homes
Bear Trap Hot Springs, 10 Homes
Belfrey Carbon County, 95 Homes
Belgrade, 250 Homes
Belt, 269 Homes
Big Fork, 170 Homes
Big Sandy, 370 Homes
Big Sky, 100 Homes
Big Timber, 800 Homes
Billings Heights, 3000 Homes
Bitterroot Meadows, 45 Homes
Blue Sky Heights, 130 Homes
Boulder, 500 Homes
Brady, 121 Homes
Bridger, 267 Homes
Broadus, 287 Homes
Brockton, 135 Homes
Browning, 2150 Homes
C & D HOA, 28 Homes
C S & K Water, 600 Homes
Carter, 220 Homes
Cascade, 198 Homes
Coffee Cree, 30 Homes
Centerville, 40 Homes
Charlo, 145 Homes
Chester, 500 Homes
Chinook, 514 Homes
Choteau, 750 Homes
Circle, 300 Homes
Clear View Heights, 28 Homes
Clyde Park, 85 Homes
Columbia Falls, 1000 Homes
Columbia Heights, 50 Homes
Columbus, 725 Homes
Conrad, 930 Homes
Coram, 90 Homes
Corbin Wua, 15 Homes
CS & K Water, 600 Homes
Culbertson, 330 Homes
Cut Bank, 1514 Homes
Darby, 270 Homes
Deer Lodge, 1390 Homes
Deerborn Water System, 10 Homes
Deerfield, 15 Homes
Del Bonita, 3 Homes
Denton, 100 Homes
Dillon, 1500 Homes
Dixon, 60 Homes
Dodson, 64 Homes
Drummond, 24 Homes
Duncan Ranch, 15 Homes
Dutton, 190 Homes
Eagle Bend, 150 Homes
East Gate, 410 Homes
East Glacier, 200 Homes
East Helena, 350 Homes
East Malta Colony, 10 Homes
El Mar Estates WUA, 450 Homes
Elm Estates, 450 Homes
Elston Loken, 300 Homes
Emkayen, 60 Homes
Ennis, 390 Homes
Essex, 28 Homes
Eureka, 450 Homes
Evergreen, 1640 Homes
Fairfield, 400 Homes
Fairhaven, 30 Homes
Fairield, 365 Homes
Flaxville, 65 Homes
Forest Park, 123 Homes
Forsyth, 1000 Homes
Fort Benton, 750 Homes
Fort Kipp, 36 Homes
Fort Peck, 166 Homes
Froid, 200 Homes
Fromberg, 177 Homes
Furtura, 48 Homes
Gardner, 307 Homes
Geraldine, 67 Homes
Geyser, 50 Homes
Glasgow, 1800 Homes
Golden Valley, 25 Homes
Gore Hil, 280 Homes
Grant Creek, 144 Homes
Grass Range, 84 Homes
Greenwood Water, 28 Homes
Hamilton, 1443 Homes
Happy Valley, 70 Homes
Happy's Water, 24 Homes
Hardin, 1033 Homes
Harlem, 450 Homes
Harlowton, 750 Homes
Havre, 3500 Homes
Hidden Heights, 28 Homes
Highwood, 27 Homes
Hill County Water, 747 Homes
Hillside Colony, 15 Homes
Hilltop Terrace, 50 Homes
Hingham, 747 Homes
Hinsdale, 150 Homes
Hobson, 65 Homes
Hot Springs, 140 Homes
Hungry Horse, 230 Homes
Hysham, 300 Homes
Ingom, 20 Homes
Issac Walten Lodge, 15 Homes
Jackson, 25 Homes
Jette Lake, 145 Homes
Joliet, 220 Homes
Jordan, 230 Homes
Judith Gap, 85 Homes
Kevin, 100 Homes
Kicking Horse, 28 Homes
KS & C Water, 640 Homes
Lake Side, 148 Homes
Lambert, 80 Homes
Lame Deer, 840 Homes
Laure, 4000 Homes
Lewistown, 2700 Homes
Libby, 1800 Homes
Livingston, 3400 Homes
Lockwood, 1600 Homes
Lolo Water District, 660 Homes
Malta, 800 Homes
Manhattan, 451 Homes
Marco, 24 Homes
Martinsdale, 80 Homes
Meadow Village, 70 Homes
Medicine Lake, 230 Homes
Melstone, 90 Homes
Miles City, 349G Homes
Mission Mountain Water, 28 Homes
Missoula Water, 205 Homes
Moore, 100 Homes
Mountain Water, 6000 Homes
Nashua, 150 Homes
North Havre Water District, 56 Homes
North Valley Water District, 200 Homes
Noxon, 80 Homes
Opheim, 110 Homes
Outlook, 50 Homes
Overlook, 12 Homes
Pablo, 168 Homes
Paradise, 98 Homes
Phillipsberg, 322 Homes
Pinewood, 81 Homes
Plains, 444 Homes
Plentywood, 978 Homes
Plevna, 45 Homes
Polson, 1350 Homes
Ponderella Hills, 24 Homes
Ponderosa WUA, 24 Homes
Poplar, 110 Homes
Pt Armigan Village, 50 Homes
Rae Subdivision, 250 Homes
Ramer, 30 Homes
Rau School District, 10 Homes

Red Lodge, 1200 Homes
Rexford, 69 Homes
Richy, 140 Homes
Ron Thomas, 800 Homes
Ronan, 800 Homes
Round Butte, 110 Homes
Roundup, 900 Homes
Roy, 25 Homes
Rygate, 105 Homes
Saco, 80 Homes
Salish Kootenie Water, 600 Homes
Salish Shares, 28 Homes
Sanders County WD, 60 Homes
Scobey, 800 Homes
Seeley Lake, 380 Homes
Shelby, 1500 Homes
Sheridan, 365 Homes
Shilo Shores, 24 Homes
Sidney, 1200 Homes
Sleeping Buffalo, 15 Homes
Somers, 146 Homes
Sorrell Springs, 60 Homes
South Chouteau WUA, 27 Homes
South Hills, 28 Homes
Spring Water, 15 Homes
Springdale, 25 Homes
St Ignatius, 280 Homes
Stanford, 180 Homes
Stevensville, 800 Homes
Strobel MHP, 21 Homes
Sun Prairie, 278 Homes
Sun River, 100 Homes
Sun Set West, 32 Homes
Sunburst, 200 Homes
Sunny Brook, 28 Homes
Sunny Meadows, 60 Homes
Superior, 300 Homes
Sweetgrass, 65 Homes
Tamarack, 60 Homes
Target Range, 100 Homes
Three Forks, 616 Homes
Tiber WD, 250 Homes
Townsend, 650 Homes
Tracey, 82 Homes
Tri County Water District, 170 Homes
Trout Beck, 60 Homes
Trout Creek, 113 Homes
Troy, 542 Homes
Twin Bridges, 240 Homes
Two Dot, 30 Homes
Valier, 255 Homes
Valley Gardens HOA, 18 Homes
Valley View, 40 Homes
Vaughn, 180 Homes
Virginia City, 60 Homes
West Glacier, 40 Homes
West Valley Pines, 44 Homes
West Yellowstone, 500 Homes
Westby, 71 Homes
White Sulpher Springs, 500 Homes
Whitehal, 400 Homes
Wilderness Plateau, 24 Homes
Wilsal, 100 Homes
Winnett, 108 Homes
Wolf Point, 1200 Homes
Woodside, 24 Homes
Worden Ballintine, 300 Homes
Yellow Bay, 24 Homes
Youth Mission Water Assn, 50 Homes
Zortman, 87 Homes

THREE EXAMPLES OF TECHNICAL ASSISTANCE

City of Deer Lodge

The city of Deer Lodge is located in Powell County, Montana and serves nonchlorinated water to 1,230 nonmetered connections. The system is supplied by a groundwater source consisting of two metered wells. The full-time operator, Don Roberts, is certified. The operator contacted the Circuit Rider early one Sunday morning and requested immediate assistance with locating a water leak. The City's 2½ million water tank had only one foot of water in it. The Circuit Rider and the operator began a systematic check of the system in an attempt to locate the problem. The Circuit Rider determined that the "leak" was due to high usage because of hot weather and connections that were not metered. At their second well, a pilot control valve had been installed and the pump had not been put back into operation. The Circuit Rider immediately checked the installation and found everything to be in order. He instructed the operator on the operation of the new control valve and the pump was started. By 7 o'clock AM the next morning, the tank was three-quarters full. The Circuit Rider met with the Mayor and recommended installing water meters, which would save the system approximately $1,000 per month.

City of Fairfield

The city of Fairfield has a certified operator and a series of wells. The system had exceeded the level of Nitrate on one well, and all the wells were over the trigger for Nitrite. The system checked out Montana Rural Water Systems Association's field test lab and the operator was able to prove his well was consistently below the nitrate/nitrite levels. The operation is now set up with a regularly scheduled testing program. Also, the Montana Rural Water Systems Association's Program Manager completed the required recording for the system on exceeding Pb/Cu. The system was then able to submit their corrosion control report to the State Primacy Agency. Approval is forthcoming for the system to actually install corrosion treatment. The Town of Darby is located in Ravalli County and serves 263 connections which are not metered. The system is supplied by a groundwater source and is not metered. The part time operator called the Circuit Rider at home, and requested help because the system had bad water samples with fecal coliform present and the Water Quality Bureau put the system on a boil order. The Circuit Rider arrived at the Town of Darby water system and met with the operator and Mayor to lay out a course of action. The system was checked for cross connections and none were found, however the Circuit Rider did find the system had backups. With the high water table, this probably was the cause of the problem. The Circuit Rider directed the Mayor and operator to repair the leaks. The Circuit Rider helped the operator chlorinate

the wells, water tank, and distribution system. This has not been done in a number of years. After the system was thoroughly flushed, new samples were taken and all came back good. As a result of this contact, the Water Quality Bureau lifted the boil order. The system has saved over $1,000 dollars a year in sampling costs and outside professional help.

Rapelje Water Users Association, Yellowstone County

Rapelje Water Users Association is located in Yellowstone County and serves 40 connections, which are not metered. The system is supplied by a spring and the source is metered. Rapelje employs a part time operator who is certified. Mark Doley, operator for Rapelje, requested the Montana Rural Water Systems Association Circuit Rider assist in locating a high pressure problem causing water lines to break. After arriving at the system, the Circuit Rider evaluated the problem and recommended the operator install the proper size of magnetic starters in the control panel. Because of the wrong size starters, the amperage draw would weld the point together and not allow the pump to turn off causing the high pressure in the system. The Circuit Rider also recommended installing a pressure relief valve, should there be problems with high pressure in the future. The above action will save the system considerable money in repairs.

TESTIMONY OF WILLIAM R. MILLS, JR., GENERAL MANAGER, ORANGE COUNTY WATER DISTRICT FOR THE ASSOCIATION OF CALIFORNIA WATER AGENCIES

Good morning. my name is Bill Mills and I am general manager of the Orange County Water District in Southern California. I am here today representing the Association of California Water Agencies (ACWA) as chairman of ACWA's Water Quality Committee. ACWA's 420 public agency members collectively deliver, through their urban and agricultural water districts, 90 percent of California's water supply.

Mr. Chairman, it is a pleasure to be here with you this morning to express ACWA's support for S. 1316, the Safe Drinking Water Act Amendments of 1995, as introduced, and to discuss with you why this legislation is vital to California. I would like to start by thanking you, along with Senators Max Baucus, Dirk Kempthorne, Harry Reid, as well as Senator Barbara Boxer and other members of the committee for their important contributions toward crafting S. 1316, and for holding this hearing today. ACWA members appreciate your committee's interest in addressing the concerns of California's water purveyors and their customers, as well as the long hours spent by you and your staff in drafting this bill, and the bipartisan nature in which this bill was introduced.

In California, water issues are truly important and truly contentious. Reaching consensus, between urban and agriculture, north and south, and environment and industry, is vital to California's economy and public health. ACWA members believe S. 1316 is a good starting point in reaching consensus on several drinking water issues of importance to California consumers. In particular, ACWA members support the bill's provisions addressing: standard-setting and the use of good science, voluntary source water protection, radon, arsenic, and research funding. In addition, ACWA is seeking clarification of the definition of public water systems.

This morning, I would like to specifically address each of these provisions in the context of solving California's drinking water needs and ensuring the effective and efficient protection of public health.

STANDARD-SETTING AND GOOD SCIENCE

ACWA members strongly support efforts to incorporate good science into a reformed standard-setting process for drinking water contaminants. They recognize how difficult reaching consensus on this issue has been for the committee throughout the negotiation process. We believe that before billions of dollars are spent changing the technologies for treating drinking water, scientific evidence should be weighed to determine whether the expenditure is necessary to protect public health.

For example, under current law, the city of San Diego expects to spend about $60 million over the next 15 to 20 years to meet Safe Drinking Water Act (SDWA) standards, which may not provide commensurate health benefits. Money spent on these standards, which may not be needed, could instead pay for other priorities such as new police officers, after-school programs, nonprofit community groups, alcohol and drug treatment or public health care services. A similar financial concern for Los Angeles was outlined in a speech by California Senator Dianne Feinstein, recorded in the Congressional Record of January 23, 1995. Senator Feinstein cited how compliance with the current SDWA will cost the city of Los Angeles in excess of $245 million over a 5-year period. For San Diego and Los Angeles, requiring the

use of good science in determining whether proposed standards for removing drinking water contaminants actually benefits public health is a common sense approach that is urgently needed.

In California, new regulations for radon, groundwater disinfection and other substances could raise the annual price tag for monitoring and treatment to as much as $7 billion per year. Given the tremendous dollar amount being spent, the public must be assured that regulations result in real health benefits, not just doing what is technologically possible.

ACWA members support the requirement that the EPA Administrator use the best available peer-reviewed science and supporting studies conducted in accordance with sound and objective scientific practices. We appreciate the efforts of Senator Pete Domenici and others to include such a provision in S. 1316. Our members support assuring that the presentation of health effects information is complete, unbiased and informative. EPA should identify the population addressed, the assumptions used, uncertainties, and risk estimates when it develops scientific conclusions. This would allow the regulated community and the public to be fully informed of the science used in EPA's drinking water regulatory decisions.

VOLUNTARY SOURCE WATER PROTECTION

ACWA members support the inclusion of a voluntary source water provision in S. 1316 and especially appreciate the leadership of Senator Kempthorne in this area. This provision reflects the commendable efforts of water suppliers, agricultural, and industrial groups to become allies in drinking water protection. They have worked with the committee to produce an innovative source water protection provision in S. 1316 based on partnerships and financial incentives. It is a voluntary approach that incorporates a carrot, rather than a stick, for keeping our drinking water safe, and ultimately reduces the need for additional costly treatment.

The provision recognizes that we do not need more layers of regulations to protect our drinking water. What we need is the help and cooperation of more "partners" to safeguard our nation's water resources. The "carrot" provided by financial incentives in the bill will ensure that efforts to make the water safe do not degenerate into finger-pointing and arguments about who should pay.

Groups representing agriculture and industry have taken a major step in The fight against source water pollution. The water supply community appreciates the efforts of agriculture and industry, and commends this new partnership as a vital initial step toward addressing this pressing problem.

An example of how this partnership can benefit California can be seen through the programs of the Metropolitan Water District of Southern California. MWD, which provides more than half of the region's drinking water, has appropriated about $1.2 billion for new facilities to improve water quality for its nearly 16 million consumers over the next 10 years. MWD meets or surpasses all State and Federal drinking water quality standards, is building the facilities necessary to meet future standards, and conducts or supervises more than 350,000 water analyses each year to protect water quality.

However, MWD has recognized that all of this major new capital spending is not enough. Despite this substantial financial investment in water quality, there is no guarantee that new treatment processes will remove all contaminants not yet identified or regulated. MAD and other water utilities have acknowledged that they cannot singlehandedly protect sources of drinking water. They must have the help and cooperation of those who live and work upstream. The partnerships facilitated by the provisions of S. 1316 will help go a long way toward accomplishing this goal.

RADON

California water suppliers have been concerned over the delays in resolving the radon in drinking water issue. This reflects a continuing controversy over EPA's proposed radon rule and a genuine concern by lock communities the proposed standard would create a tremendous financial burden without commensurate public health benefits. The radon provision in S. 1316 would expedite the promulgation of a reasonable drinking water standard for radon.

ACWA, along with the Alliance for Radon Reduction, supports the legislative provision which would establish a single drinking Water standard for radon that would be related to the background level of radon in ambient (outdoor) air. Radon from soil gas is responsible for 99 percent of the public's exposure to radon, while drinking water accounts for only 1 percent of total exposures to radon in the home. According to EPA's National Ambient Radon Study, which was conducted in accordance with the indoor Radon Abatement Act, the average radon concentration in ambient air is 0.4 picoCuries per Liter (pCi/L). Based on EPA's 10,000: 1 transference

ratio for water to air, the maximum contaminant level (MCL) that would be consistent with ambient levels is in the 3000–4000 pCi/L range. in reviewing the EPA's multimedia risk assessment for radon, the Science Advisory Board (SAB) stated: ". . . (S)etting a water standard at 3,000 pCi/L would result in water contributing no more radon to indoor air than is present in outdoor air."

ACWA members are supportive of the legislation which establishes a single drinking water standard at 3,000 picoCuries per liter. This approach would be easy to implement on an expedited basis and would address those situations where radon in drinking water contributes significantly to indoor air radon concentrations. Setting a radon standard at 3,000 pCi/L would also allow the limited resources available to states and localities to be directed at more important public health priorities.

The overly restrictive standard for radon in drinking water proposed by EPA of 200–300 pCi/L would have placed a significant burden on California communities and ACWA member agencies. For example, the Fresno Municipal Water System, which supplies groundwater to 102,000 residential and commercial users would have been required to spend $197 million to comply. in Orange County, a detailed study has revealed that compliance costs could exceed $110 million, not including land or operational costs. These costs could rise rapidly, since the stripping towers proposed by EPA for removal of radon would likely be prohibited by air emission standards and therefore more costly alternative technologies would be required. Additionally, strong opposition is likely to occur when locating the stripping towers near existing homes.

ACWA also believes that the standard should subsequently be revised after further peer reviewed scientific studies are conducted with SAB and the National Academy of Sciences review. it is important to emphasize that there is currently serious scientific debate over whether there is a risk from the ingestion of radon in drinking water.

Over the past several years in anticipation of the SDWA reauthorization, ACWA members have worked closely with the offices of Senators Kempthorne, Smith, Lautenberg, Kerrey, Domenici, and Chafee to reach a consensus on how to address radon in drinking water. it is this kind of bipartisan effort that is critical to meeting environmental concerns and protecting public health in California.

ARSENIC

Additionally, the 1986 Amendments to the SDWA directed EPA to promulgate, by June 1989, a national primary drinking water standard for arsenic that would potentially revise the current 50 ppb standard. EPA's failure to issue a revised standard by the deadline has resulted in the establishment of a court ordered schedule by the District Court of Oregon.

Uncertainties in the health risk assessment for arsenic ingestion, and technical issues regarding the adequacy of field-tested treatment technologies, have complicated EPA's task of developing a regulatory proposal. Additionally, some of the regulatory options being considered by EPA would impose significant costs on public water systems.

Recently, ACWA completed a low level arsenic occurrence study of water sources used by its member agencies. This survey reveals that if the arsenic MCL is revised to as low as 1 ppb, more than 50 percent of the surface water sources, and 65 percent of the ground water wells surveyed would require treatment.

An example of this, Central Basin Municipal Water District, in South Los Angeles County, California, has conducted several radon and arsenic groundwater occurrence studies over the past several years, by sampling most of the 250 active domestic supply wells in the basin. The district discovered that lower standards for radon and arsenic could impact 50 to 75 percent of the supply wells in the basin. And aside from the cost issue, this could reverse the recent trend of full utilization of local water sources which decreases reliance on imported water from the Sacramento—San Joaquin River Delta.

These examples demonstrate why EPA has concluded that there is a need "to gather additional information on the potential health benefits of regulating arsenic and on potential treatment technologies before proceeding further with these regulations." EPA notified the District Court of Oregon on July 26, 1995, of the Agency's intention to establish "an interim extension of the November 1995 schedule for several years during which the additional research would occur . . ."

Moreover, the water supply community along with other industry groups have recognized the need for additional health effects research on arsenic, and have been evaluating, and in some cases have initiated, research projects designed to better define the risk associated with low level arsenic exposure. Already, professional associations in the water community, such as ACWA, the American Water Works As-

sociation, and the AWWA Research Foundation, have committed over $500,000 in current arsenic research projects. These groups co-sponsored a National Arsenic Research Workshop this summer, which brought together scientists from EPA and universities to begin to map out a prioritization of arsenic research projects. Last on this topic, stakeholders participating in the regulatory reassessment meetings of EPA's Safe Drinking Water Initiative overwhelmingly rated arsenic high for research or information development rather than regulation development at this time.

This helps explain why the arsenic provision in S. 1316 is so important. ACWA supports the arsenic language developed by Senator Kempthorne that would require EPA to develop and implement a comprehensive Research Plan, in consultation with the SAB, to reduce the uncertainty in assessing health risks associated with exposure to low-levels of arsenic. The Administrator may enter into cooperative research agreements with other Federal agencies, state and local governments, and other interested public and private entities to carry out the research plan.

Once all of this research is completed, EPA will be able to move forward with an arsenic regulation that local communities can support because it is based on good science.

RESEARCH FUNDING

ACWA would like to express unqualified support for the research provisions of the bill, whose findings will be of prime importance to San Francisco and other cities throughout California. Authorizing funds for arsenic, disinfection byproducts and microbiologic contaminants such as Cryptosporidium, is critical to assuring that regulations are reasonable and based on "good science." Without such expenditures, EPA may be faced with establishing regulations on the basis of out-of-date and inappropriate information. ACWA strongly urges the Committee to support the research funding provisions throughout the entire reauthorization process.

DEFINITION OF PUBLIC WATER SYSTEM

Lastly, S. 1316 contains a section which defines the term "public water system", known in primarily agricultural water circles as "Pipes and Conveyances" language. The committee staff, with input from EPA, worked hard to draft language acceptable to Western water districts. The language modifies the definition to include some systems that provide water by means other than a piped system, but to exclude from the definition those connections where alternative water supplies or treatment to levels equivalent to national primary drinking water regulations is provided before the water is used for drinking or cooking. This language is considered workable by several of ACWA's larger primarily agricultural systems, but will impose new requirements on some smaller districts in California whose facilities include open conveyances. ACWA recommends that the committee staff continue working to clarify this language to ensure that these smaller districts or their consumers who are unable to absorb additional cost burdens of alternative supplies are not adversely impacted.

Again, thank you for this opportunity to present the views of the California water community. ACWA believes the Committee has produced a reasonable and necessary reform of SDWA. We support S. 1316 as introduced, and look forward to working with you to ensure its quick passage by the Senate.

STATEMENT OF HON. E. BENJAMIN NELSON, GOVERNOR OF NEBRASKA

Good morning, Mr. Chairman, Senator Kerrey, and members of the committee. Governor Nelson serves as the vice chair of the National Governors' Association Committee on Natural Resources, and we both serve as NGA's Co-Lead Governors on federalism. As we are sure you know, for the past 2 years NGA has made reform of the Safe Drinking Water Act one of its highest priorities, and it is a great pleasure to appear here today to testify on the bipartisan drinking water reform bill recently introduced by members of this committee and others.

Before we speak to the bill itself, we want to acknowledge the extraordinary role played by several individuals in the development of this legislation. First, we want to salute Senators John Chafee and Max Baucus. As the chair and ranking member of this committee, you have had a particularly important role to play in developing this bill, and we appreciate the many hours of hard work and thoughtful deliberation that you have invested in it. Your commitment and diligence were instrumental in bringing the work to this point.

Finally, we want to convey the sincere gratitude and appreciation of the nation's Governors to Senator Dirk Kempthorne. More than any other, it was Senator

Kempthorne's vision, understanding, leadership, and perseverance that made this bill possible. Senator Kempthorne, the spirit of this bill shows that you remember what it is to be a local official charged with upholding the public interest and trying to balance the priorities of local governance with the often conflicting, sometimes irreconcilable demands of Federal mandates. We know that without your leadership and hard work, we could not have advanced the sensible reforms of the drinking water program that are incorporated in this bill. Thank you very much for all your hard work on our behalf.

SELECTION OF FUTURE CONTAMINANTS

With respect to the bill itself, we would like to make several points. The first is the critical need for reform of the Safe Drinking Water Act. U.S. Environmental Agency (EPA) Administrator Carol M. Browner has acknowledged a fact that state and local officials have long known, that the drinking water program is broken and must be repaired.

The current program is arbitrary and nonsensical in crucial respects. For example, there can be no justification for requiring EPA to regulate twenty-five new contaminants every 3 years, regardless of whether or not they actually occur in the drinking water. The provisions in this bill requiring EPA to regulate whatever occurs in the water at levels of health concern is the proper approach; and that alone would make a huge improvement over the current law. Ensuring that decisions are based upon the best available, peer-reviewed science is another very important improvement. We feel strongly that this requirement should apply to the entire title and not just to the selection of contaminants for regulation. Directing EPA to establish priorities for the development of new standards based upon potential public health effects is a major improvement in a program that has in the past been driven more by congressional requirements and the courts than by scientific considerations. And requiring EPA to consult with the Centers for Disease Control (CDC) is also a very positive and important change, though we would like to go one step further and require that EPA actually respond in writing to comments made by CDC, before it proceeds with any rulemaking.

We would like to note that the earmarking of funds for health effects research is an important way to ensure that there is good science underpinning this program. This bill markedly improves the protection of public health through the drinking water program in part because it significantly increases the level of spending on research. Without good data and good analysis, EPA cannot make good decisions in this or any other program. We urge you to preserve the earmarking of funds for health effects research.

STANDARD-SETTING

Another fault in the current law is that it can impose very large costs on our communities without corresponding benefits. As an example, consider the upcoming rulemaking for disinfectants and disinfection byproducts. EPA's negotiating committee on this rulemaking has estimated that the use of the current standard-setting process could require EPA to set a standard with nationwide compliance costs as high as $60 billion or $70 billion. The benefits of such a standard are unknown. We simply cannot afford to have from $60 billion to $70 billion taken from our communities without a sense of what we will get in return, of what we are buying with that money. The people have a right to know what they are getting when the government makes them spend their money—money that would otherwise remain available for addressing other important needs in the community, or that would perhaps remain in the people's pockets for them to spend as they see fit.

This issue is of fundamental importance, and the Governors, along with other members of the state-local drinking water coalition, have made reform of the standard-setting process our most important priority in reforming the drinking water program. The bill before us requires EPA to conduct an analysis of costs and benefits of alternative standards, including benefits that are real but nonquantifiable. It *allows* EPA to consider such costs and benefits in setting any new standards and to reduce the expense of any standard for which the benefits to large systems don't justify the costs to those systems. Frankly, we would have preferred a requirement that costs and benefits always bear a reasonable relationship to each other. However, the bill as written is a vast improvement over current law and we will support it. We could not support any change that weakens the role of cost-benefit analysis in setting new standards or that reduces the EPA's authority to consider costs and benefits in setting standards in the future.

MONITORING

One of the largest costs imposed on our communities under this program is the cost of repeatedly monitoring or testing the quality of the drinking water. Obviously, the safety of the water must be ensured, but in many of our communities, many or most of the regulated substances have *never* been found in the water. Yet the testing is required continually, at great expense. One of the earliest calls we made for reform of this program was the call to allow states to work with local water suppliers to tailor these monitoring requirements. The bill before the committee allows states to submit an alternative monitoring plan to EPA and to adjust monitoring requirements within certain limits, unless EPA disapproves the state's alternative plan. We can support this provision as written, but could not support any amendments that further limit state authority or that change the burden of proof on the EPA decision concerning the state's alternative monitoring plan. The states can and must be trusted to look after the health and wellbeing of their citizens.

WATER SYSTEM CAPACITY DEVELOPMENT

Most of the water systems in the United States are small water systems. Nationwide, about 94 percent of all community water systems serve under 10,000 people. Small systems often have a harder time than larger ones do with many of the requirements of the Safe Drinking Water Act, and are more likely to have a history of noncompliance. That does not necessarily mean that the water is unsafe in those systems, and in part it reflects the fact that EPA has managed the drinking water program with an almost exclusive focus on the needs and capabilities of larger systems. Nonetheless, we have to do more to resolve the problems associated with our smaller water systems. The bill requires states to have legal authority or other means to prohibit the development of new systems that don't have the capacity to meet the Federal health standards and other requirements, or they lose a portion of their State Revolving Fund (SRF) grant. States must also have a plan to help existing small systems develop the capacity they need to comply with the law, and can use a portion of the SRF grant to carry out this strategy.

We believe that if the goal is delivering safe water to our citizens, then an SRF penalty for falling to have legal authority to prevent the development of new systems is likely to be counterproductive in the long run. We would also note the extraordinary degree to which capacity development is tied to community development decisions, which have historically been and should remain a primarily state and local matter, rather than a Federal one. Having said that, we are prepared to support the provisions of the bill as written. We would not support efforts to increase the amount of the SRF penalty or otherwise increase Federal leverage over locally sensitive issues such as water system consolidation, as such efforts are likely to backfire.

SOURCE WATER PROTECTION

EPA has said and the Governors agree that we need to protect drinking water sources from contamination. This is a matter of good common sense and sound public policy. The proposed bill includes a requirement for states to delineate drinking water sources and assess the vulnerability of those determined by the state to be a priority. The state may use some SRF funds to carry out this work and may set a priority-based schedule for conducting the work within available resources. These provisions allowing the use of SRF funds and the development of priority-based schedules are important concepts in recognition of the scarcity of resources at every level of government today and must be maintained in the bill. The bill-also allows states to establish petition programs under which water suppliers could submit a petition for the support of voluntary source water protection partnerships with those in the source water area whose activities affect the quality of the water. States would have more flexibility if they had the option of accepting petitions either when a contaminant is detected in the source water or when it is detected in the community water system. Nonetheless, the bill as written represents an important step in the right direction.

SMALL SYSTEMS PROVISIONS

As noted above, though most of the American public gets its water from large systems, most water systems in the United States are small. We are pleased that this bill recognizes and addresses the special needs of small water systems. In particular, we applaud the requirement for EPA to identify technologies that are appropriate for small water systems, the development of a new variance section for small

systems, based on affordability criteria developed by the state, and the provision of new resources for technical assistance to small systems.

INFRASTRUCTURE DEVELOPMENT ASSISTANCE

One of the most important features of this bill is the authorization of $1 billion annually for the capitalization of State Revolving Funds. These funds, matched by state contributions, would be used to support investments in drinking water infrastructure—a critical need in many of our communities, for which there has never before been a dedicated fund. Several features of the SRF provisions of this bill are very creative and responsive to state concerns. These include the ability of the state to use a portion of its SRF grant to support basic administration of the program, the ability to use a portion of the program to provide grants rather than loans to needy communities, and the ability to transfer funds between the drinking water SRF and the wastewater SRF created under the Federal Water Pollution Control Act, in response to state and local priorities. Taken together, these provisions give us far greater flexibility in the way we use the SRF to address infrastructure development than we have had before. We strongly support the SRF and the flexibilities you have given us to use it effectively, and appreciate your care and attention on this matter.

ENFORCEMENT ISSUES

We know that last year and again this year enforcement has been a contentious issue. Some have wanted to significantly expand state and Federal enforcement authorities under the drinking water law. We believe that such an expansion is not the answer to the problems in the drinking water program. Given that so much of our water is delivered by public utilities and by local governments, it is entirely appropriate to focus on assisting with compliance first and enforcement only as a last resort. That is why we are uncomfortable with the requirement that states develop administrative penalty authority, as well as with the proposed increases in the amounts EPA can collect through its penalty authority. We can live with these provisions because on balance this bill is a good one. Nonetheless, we want to register objection to a philosophy that says, in effect, that states and EPA must have more aggressive enforcement tools to force compliance with the law. The major motive for compliance is not enforcement. It is that local officials and their families drink the water. EPA officials and even state officials probably do not. It is our experience that where there are compliance problems, there is almost always an underlying problem that needs to be solved, not an unwillingness that needs to be punished. The law should focus on fixing those underlying problems.

For the same reason, we have to register disappointment that this bill does not address an important recommendation of state and local officials, to prevent citizen lawsuits against a water system that is complying with a government order to correct the problem that is the subject of the suit. If the government has fallen down on the job and is not addressing an ongoing violation of the law, citizens have every right to seek redress through the courts. But when the government has acted and the water system is in compliance with an order that corrects the problem, we should not allow citizen groups to second-guess the judgment of the professionals through the courts. Doing so is unfair if the water system is doing what the government has told it to do in response to the problem, and is a disincentive for the water system to work with the government to fix the problem in the first instance, if it may still be sued. If citizen groups are unhappy with the government's fix for one of these problems, and there really is a case that the government has failed to protect public health, they have an avenue for appeal that is better than a citizen lawsuit. It's called an election. I can't imagine any official wanting to stand for reelection in the face of a charge that he or she has abetted an ongoing violation of the Safe Drinking Water Act.

CONCLUSION

In closing we will simply say once again how much we appreciate the committee's hard work in developing the drinking water amendments you have before you. As we said in a recent letter, this bill modernizes the drinking water program as America eaters the 21st century. Let there be no question that the bill as written strengthens the protection of public health and improves the drinking water program in many very important respects. The bill deserves your strong support, and we urge the committee to report it expeditiously and the full Senate to approve it as soon as possible.

STATEMENT OF ERIK D. OLSON, SENIOR ATTORNEY, NATURAL RESOURCES DEFENSE COUNCIL

I am Erik D. Olson, a Senior Attorney the Natural Resources Defense Council, a nonprofit public interest organization with over 170,000 members dedicated to protection of public health and the environment. I appear today as Coordinator of the Steering Committee of the Campaign for Safe and Affordable Drinking Water, an alliance of over 300 public health, consumer, environmental, religious, labor, environmental justice, HIV/AIDS, and other organizations who have joined forces to seek stronger and more efficient protection of one of the nation's precious resources, our drinking water. A list of the member organizations is attached to this testimony. Thank you for providing us with the opportunity to testify today on S. 1316, the Safe Drinking Water Act Amendments of 1995.

We appreciate the bipartisan negotiations that lead to the development of this bill, and we recognize that certain parts of the bill will advance the cause of better protecting our drinking water. For example, we are pleased with the bill's authorization of a multi-billion dollar State Revolving Fund for drinking water system upgrades and related purposes. We also recognize that the bill retains the Boxer amendment from last year's bill, requiring research on and consideration of the adverse health effects of drinking water contaminants on vulnerable subpopulations such as infants, pregnant women, children, the elderly, and those with chronic illnesses.

However, after a preliminary review, NRDC and the Steering Committee of the Campaign for Safe and Affordable Drinking Water are disappointed with this bill and deeply concerned about several provisions that could weaken the public health protections currently required. We are disturbed that the legislation substantially weakens many of the positive programs contained in the drinking water bill (S. 2019) passed by a 95–3 vote of the Senate in May 1994 such as the viability program, the operator certification and training program, the enforcement improvements, and source water protection provisions.

While the Safe Drinking Water Act has improved our tap water quality and a small corps of progressive water utilities are voluntarily and conscientiously taking action to improve their water quality, the need for strengthened drinking water protection is clear. Since this Committee last held a hearing on drinking water, there have been over a dozen waterborne disease outbreaks, including a significant *Cyptosporidium* outbreak in 1994 in Las Vegas, Nevada, in which dozens of immune compromised people died.[1] Since the last Safe Drinking Water Act amendments, according to Centers for Disease Control and Prevention data, half a million Americans are known to have become ill from the simple act of drinking a glass of tap water, and ten to twenty-five times that number are estimated to have become ill from tap water without reporting it.[2] According to the best available, peer-reviewed scientific epidemiologic and other data (studying people, not rodents), from many hundreds to over 10,000 Americans contract cancer every year from tap water contaminants such as disinfection by-products, known human carcinogens like arsenic and radioactivity, and other toxins in our public water supplies.[3] The human preventable suffering and economic costs of these illnesses and deaths are staggering.

The Campaign is united behind the following tenets, which guide our evaluation of any drinking water reform proposal:

PRINCIPLES FOR DRINKING WATER PROTECTION

Preamble: Safe and affordable drinking water is a basic right for everyone. No matter where we live, work, or travel, and regardless of our age, physical condition, pregnancy, illness, race, or other personal circumstances, this right must be honored and preserved. Therefore, the following principles should be observed as national policy:

- *Protect Our Infants, Children, Pregnant Women, Elderly, and Other Vulnerable People From Drinking Water Contamination.*
- *Strengthen, Don't Weaken, Health Standards for Drinking Water.*
- *Guarantee Our Right to Know What's in Our Water.*
- *Ensure Safe Water for* All *Communities, Large and Small, Rich and Poor, and Regardless of Race or Ethnicity.*
- *Save Taxpayers Money and Keep Water Safe by Preventing Pollution at the Source.*
- *Protect Consumer Pocketbooks by Making Polluters Pay Their Fair Share for Drinking Water Protection and Cleanup.*
- *Strengthen and Streamline Enforcement of Drinking Water Laws.*
- *Get the Lead Out of Our Water to Protect Our Kids.*

- *Help Communities Pay to Modernize Old and Unsafe Water Systems, to Help Ensure Affordable Water and Create US Jobs.*
- *Require Water Systems to Show That They Can Comply and That Their Operator Are Competent.*
- *Improve Drinking Water Research and Disease Monitoring.*
- *Protect Consumers By Setting Strong Health Standards for Bottled Water, and Requiring Independent Certification That Home Treatment Units Provide Safe Water.*

While some provisions of this year's Senate bill (S. 1316) would advance these principles (such as the SRF and vulnerable subpopulations provisions), unfortunately much in the bill does not.

In the following section, we list many of the key concerns we have and needed improvements in the bill. We oppose the bill's sound science provision's application to all decisions under the Act (including enforcement and grant formula decisions, for example), and the very weak source water protection provisions—both concerns EPA has raised. I would like to focus, however, upon two of the most important other amendments needed:

1. *Right to Know About Our Drinking Water.* The bill should make improvements in the law to empower local citizens with information about the quality of their drinking water so they can act to improve it. Specifically, as recently recommended by the congressionally established National Drinking Water Advisory Council (made up of representatives of the water industry, states, small water systems, and public health and environmental organizations), the SDWA should track the current California law[4] by requiring water systems to provide their customers with an annual report on the quality of their tap water.[5] We believe this should include information on *Cryptosporidium*, exceedences of health goals for all 'contaminants including arsenic and radon, a review of any legal violations, and any variances, exemptions, or waivers for the system.

2. *Preserving EPA's Ability to Protect the Public from Cryptosporidium Arsenic Radon and Urgent Threats to Health.* We are fundamentally opposed to the bill's provisions that would delay the court-ordered deadlines, and weaken the standards for arsenic, radon, and disinfection of groundwater, and that could be read to subject EPA's decision to expedite the rule for *Cryptosporidium* or disinfection by-products to an industry veto, even in the case of an urgent threat to health (for example, if recent data indicating that disinfection by-products may cause birth defects is confirmed). These court-ordered deadlines were set because EPA was violating the law and allowing millions of people to continue to consume contaminated tap water for years. These provisions should be dropped. At a bare minimum, the bill should be amended to:

(a) clarify that if EPA finds there is an urgent threat to health, the Agency is not constrained by the numerous study, analysis, and other procedural hurdles now added to section 1412 (including the possible industry veto of an expedited *Cryptosporidium* and disinfection by-product rule);

(b) require all water systems, pending the delay in the updated arsenic and radon rules, to monitor for and notify the public of the levels of those contaminants in their water if found at levels over health goals; and

(c) require EPA, within 180 days of enactment, to determine whether sufficient research funding has been committed to assure that the agency will have substantially improved data to warrant a delay in issuing an updated arsenic rule (considering low dose effects) and radon rules (considering internal cancer risks and actual short term exposures from showering and other water uses). If inadequate commitments have been made, there is no reason for further delay and EPA should be required to issue final rules as currently required under court order.

In addition, we would like to work with members of the Committee to improve the lead in plumbing fixtures provision, and the source water protection provision to include a "polluter pays" amendment that will assure that polluters help rate payers by paying for their fair share of upgrades necessitated by pollution problems they create in the first place.

Major Concerns With S. 1316

We are troubled by many provisions in this legislation and disappointed by the many concessions that have been made to weaken last year's bill. Among our key concerns after a preliminary review of the bill (listed in the order they appear in the bill rather than in order of importance):

1. *Preserving EPA's Ability to Act Where there is an Urgent Threat to Health.* The urgent threat to health provision (pp. 35–36) is unclear. The EPA authority to issue an interim standard is seriously undercut because EPA apparently still must issue an Advance Notice of Proposed Rule Making (ANPRM) and complete an entire cost/

benefit analysis and related analyses to issue such a standard (pp. 43–47)—a wasteful, time-consuming, and potentially dangerous exercise. It must be made unambiguous that the analytical and other requirements of amended § 1412(b)(3), (b)(8), and (b)(12)–(14)—do not apply if there is an urgent threat. The provision should be amended to state that the Administrator may issue an interim NPDWR in the event of an urgent threat "notwithstanding any other provision of this section" or at least "notwithstanding the requirements of § 1412(b)(3), (b)(8), and (b)(12)–(14)."

2. *New Contaminant Selection.* The bill could be read to vacate court orders requiring EPA to issue final rules for over a dozen contaminants, including radionuclides, metolachlor and cyanazine (p. 40 lines 10–19). The bill requires only that EPA determine *whether* to issue standards for 5 new contaminants by 2001 (p. 32). Last year's bills required a review of at least 15 new contaminants. EPA likely will leave many important contaminants unregulated if this provision is passed as proposed. All contaminants in the regulatory pipeline for which a court-ordered deadline has been issued should still be required to be regulated, and the number of new contaminants EPA evaluated should be increased back to 15.

3. *Disinfection By-Product (D/DBP) and Enhanced Surface Water Treatment (*Crypto *or ESWTR) Schedule.* The schedule provision, in requiring the DBP/ESWTR rules to be completed as "expeditiously as practicable subject to agreement by all parties to the negotiated agreement" (p.40 lines 4–6) could be read to give any party a veto over an EPA effort to issue rules in an emergency, even if EPA finds an "urgent threat to health" from *Cryptosporidium* or reproductive hazards from disinfection by-products, for example. As noted above, the urgent threat to health provision should say that the Administrator may issue an interim NPDWR in the event of an urgent threat "notwithstanding any other provision of this section."

4. *The "Sound Science" Provision Should Not Apply to Non-Scientific Decisions.* The bill's sound science provision (p. 41) should apply only "to the extent practicable and relevant." Clearly it should apply not to the entire "title" (including decisions to enforce, formulas or decisions to issue grants, etc.) but at most to the "section" (i.e. the standard setting section).

5. *Cost/Benefit Analysis.* As discussed in detail in our testimony last year before this Committee, we object to the bill's move away from the 20 year-old technology-based standard setting .provision, replacing it with cost/benefit analysis as a primary criteria, even subject to the limitations in this bill (pp. 43–46, 51–52).

6. *Delaying & Weakening the Groundwater Disinfection Rule.* Despite the fact that approximately half of the waterborne disease outbreaks are caused by groundwater-supplied systems (including a recent groundwater-supplied system outbreak near Walla Walla, Washington), the bill explicitly provides that EPA may use the cost/benefit provision to weaken the groundwater disinfection rule (p. 53 lines 13–17), and later states (p. 63 lines 13–15) that the groundwater disinfection rule shall be promulgated "[a]t the time that the Administrator promulgates a stage II rulemaking for disinfectants and disinfection by-products"—likely to be in 2000 or later. EPA apparently could not expedite this rule even if there were a series of groundwater-related disease outbreaks. These provisions should be dropped or, at a minimum, the urgent threat to health provision amended to make it clear EPA can act more quickly in an emergency.

7. *Arsenic Standard Delay and Hurdles.* The bill (pp. 55–57) requires EPA to carry out a research plan to "reduce the uncertainty" about low dose arsenic toxicity and to review the progress of that research, before issuing a new arsenic standard by 2001. This "interim" standard has remained unchanged since 1942, when it was set without considering what we now know—that arsenic is a "known human carcinogen." EPA was supposed to review it by 1989. This provision should be eliminated and EPA required to issue the standard, as now required by court order, by November 1997. At a bare minimum, as noted earlier, water utilities should be required to test for arsenic (down to low levels) and to inform their customers of the levels found in excess of health goals, and EPA should be required to determine, 180 days after enactment, whether enough funds have been committed to this arsenic research to justify delay; if not, EPA should be required to issue the rule by 1997.

8. *Radon.* We object to Congress establishing the standard for radon at 3,000 pCi/L (p. 57), prohibiting EPA from establishing a stricter standard until the agency gets prior approval from the National Academy of Sciences and Science Advisory Board (which will take many years), and then subjecting EPA to additional restrictions before issuing a new standard. The arbitrary 3,000 pCi/L level is 10 times higher than the Bush Administration proposed. While it supposedly is based on outdoor radon level risks, in fact it fails to consider substantial new evidence of radon's health threat and actual indoor waterborne radon exposure data generated in the past 2 years. This is a classic case of "unsound science," and of questionable congres-

sional determination of a highly technical issue. According to conservative EPA estimates, fewer than 14 of the 190 cancer deaths per year from radon in tap water will be avoided by a 3,000 standard. This provision should be dropped, and EPA required to issue a final radon standard as required by current court order. At a minimum, as with arsenic, water utilities should be required to test for radon (down to low levels) and to inform their customers of the levels found, and EPA should be required to determine, 180 days after enactment, whether enough funds have been committed to radon research (including research on internal cancer risks and on actual levels of exposure during showering and other uses) to justify delay; if not, EPA should be required to issue the rule by 1996.

9. *Variances for All Systems Without Time Limitations* (p. 73). The bill makes all sizes of systems, including large systems which serve 80 percent of the U.S. population, eligible to obtain variances—without first installing BAT (as currently required) and apparently without any time limitations on when BAT must be installed. Unless we are missing something, a 30 or 50 year installation schedule would appear to be allowed.

10. *"Small" System Variances for Medium Sized Systems* (p. 75). We object to the variance provision for "small" systems applying to medium-sized system serving up to 10,000 people, since systems serving over 3,300 people generally enjoy similar economies of scale as larger systems, and don't need the same special treatment as truly small systems.

11. *Suspending Penalties if a Violating Small Water System Merely Says it Cannot Afford to Comply* (p. 78). The bill would automatically suspend penalties against any violating water system, if it merely files a piece of paper (a variance application) saying it cannot afford to comply. Even if denied as a sham, the system gets four more years to comply (p. 79).

12. *Watered Down Viability and Operator Certification* (pp. 86–94). We are deeply disappointed about the seriously weakened viability and operator certification, compared to last year's bill. No longer will the bill assure that existing small systems and their operators who do not receive Federal money are minimally competent to protect public health. We require drivers to show they are competent to be behind the wheel, and hair dressers must show they are competent—why not public water system operators?

13. *Source Water Protection.* This provision (pp. 95–109), and particularly the prevention partnership" subsection is so weak that it is essentially meaningless. The bill has missed an important opportunity to prevent pollution of drinking water sources through meaningful source water protection—the most cost-effective, cost-beneficial way to improve drinking water quality. We urge that last year's already weak provision be restored, and that a meaningful "polluter pays"/ratepayer relief amendment that enables water utilities to recover the costs of treatment from polluters be added to the bill.

14. *Automatically Authorizing States to Take Over Primary Enforcement Before EPA Reviews the Adequacy of their Rules.* The bill (p. 110) would automatically authorize states to obtain "interim" primary enforcement responsibility once they adopt new drinking water rules, before the state's rules are reviewed and approved by EPA, creating potential problems if the state rules are weaker than or inconsistent with Federal requirements. This provision should be deleted.

15. *Automatic Approval of State-Weakened Water Safety Monitoring Requirements.* The bill could substantially roll back drinking water safety testing by allowing states to weaken many testing requirements, even for some systems that have found the contaminant at or near the health standard, and providing that such weakenings are automatically "deemed to be approved" if EPA has not responded to a state request for review of its relaxations within 180 days. Even non-primacy states can force EPA to weaken its water testing rules (pp. 114–121).

16. *Removing Key Enforcement Improvements from Last Year's Bill* (pp. 138–44). Last year's bill would have made EPA enforcement more workable (EPA, for example, must take four separate formal steps before imposing an administrative penalty under current law, a problem fixed in last year's bills). These provisions have been substantially weakened so that little improvement in EPA administrative enforcement is achieved. Last year's provisions should be restored.

17. *Requiring Advanced Notice to Local Politicians of EPA Enforcement Actions.* This provision (p. 139) invites last-minute political pressure on EPA to drop enforcement plans before the people drinking the water hear about them. It should be amended to require that EPA notify the politicians at the same time the enforcement action is initiated or, at a minimum, EPA should notify the public at the same time the politicians are told, so that there is some political accountability if the politician tries to stop the enforcement action. Already, fewer than 3 percent of viola-

tions known to EPA are subjected to state or EPA formal final enforcement actions; this would bring the number lower.

18. *Lead Fixtures.* The lead fixtures provision (p. 170–74) is out of date and could be read to prevent EPA from issuing rules to reduce lead in fixtures because of recently issued, unenforceable industry voluntary standards. A settlement by the California attorney general and others with most of the major plumbing manufacturers should be embodied in the law instead.

TECHNICAL ISSUES/CLARIFICATIONS

19. *SRF.* The bill should prohibit funding for the expansion of water systems or distribution systems in anticipation of future growth, so that the SRF does not become yet another counterproductive economic development fund.

20. *Priorities for New Contaminant Selection.* It should be clarified that EPA's decisions on priorities for regulation (pp. 35–5) are not judicially reviewable.

21. *DBP Savings Clause.* This should be clarified that it is not just Stage I that can be issued under section 1412(b)(5) but all of the DBP rules can be, by striking the words "Stage I" (on p. 54 line 9) and the page reference on to page 38668 on line II. Otherwise, there may be a negative implication that EPA cannot use this authority for Stage II.

22. *Filtration.* While the intent is apparent, it should be made unambiguous that the requirement that EPA issue rules specifying filtration technologies that are feasible for small systems (pp. 62–63) does not alter the filtration requirements for other systems in sec. 1412(b)(7).

23. *Small System BAT Doesn't Drive Standards.* Similarly, it should be made unambiguous that the new provision requiring EPA to issue small system BAT (pp. 67–68)—which is reasonable—does not change the meaning of the word "feasible" in section 1412(b)(4)(A)–(D) (as amended). In other words, the small system BAT will not drive the standards for large systems to be less stringent. This can be done by replacing the word "any" on p. 67 line 20 with the word "the", and inserting the words ", if any, " on line 17 after the word "means".

24. *Occurrence Database.* This provision should require inclusion of all detects of contaminants, cot just those that are quantifiable (p. 127 line 23).

CONCLUSION

We appreciate this opportunity to share our views with the Committee. While we recognize that much bipartisan effort and time has been dedicated to producing this bill, we believe that it should be amended to assure the public's right to know about our drinking water is fulfilled, and to protect the public from *Cryptosporidium*, arsenic, radon, and urgent threats to health. In addition, the bill should be amended in light of the other concerns noted in our more detailed discussion above.

FOOTNOTES

[1] Responses of the Centers for Disease Control and Prevention to Freedom of Information Act Request of the Natural Resources Defense Council, (October 1994 and October 1995).

[2] These CDC data are summarized in NRDC's publication entitled *The Dirty Little Secret About Our Drinking Water: New Data Show Over 100 Known Drinking Water Disease Outbreaks From 1986–1994, and Strong Evidence of More Widespread, Undetected Problems* (February 1995).

[3] For example, according to a comprehensive review of more than a dozen studies presenting human epidemiological data that chlorination by-products in tap water are linked with cancer, Morris *et al.* from the Medical College of Wisconsin and Harvard University concluded that over 10,000 rectal and bladder cancers per year are associated with these drinking water contaminants. Morris, R.D., A.-A. Audet, I.F. Angelillo, T.C. Chalmers, F. Mosteller, "Chlorination, Chlorination By-products, and Cancer: A Meta-analysis," *American Journal of Public Health* 82(7):955–963 (1992). EPA estimates that over 200 people die annually from radioactive contaminants in tap water, primarily from radon. *EPA, Report to the United States Congress on Radon in Drinking Water: Multimedia Risk and Cost Assessment of Radon*, at i and vii (March, 1994); *EPA, Regulatory Reassessment Fact Sheet: Radon* (March, 1995) For a review of these and much other data, see *NRDC Think Before You Drink* (1993); *NRDC, Think Before You Drink: Urgent Update* (1994), and *NRDC, You Are What You Drink . . .* (1995).

[4] California Health and Safety Code § 4030.

[5] Recommendations of the National Drinking Water Advisory Council, May, 1995.

STATEMENT OF DAVID OZONOFF, MD, MPH, PROFESSOR OF PUBLIC HEALTH, CHAIRMAN, DEPARTMENT OF ENVIRONMENTAL HEALTH, BOSTON UNIVERSITY SCHOOL OF PUBLIC HEALTH

Mr. Chairman and members of the Committee, I am David Ozonoff, a physician and Chairman of the Department of Environmental Health at Boston University School of Public Health. I have been a practicing public health professional and scientist for more than 25 years, and my research over the years has frequently involved public health aspects of drinking water. I appreciate the opportunity to present my views, and wish to publicly thank the Chairman for his many years of non-partisan leadership on important environmental matters.

For most Americans turning the tap is an Act of Faith. But if our experience is any guide, that Faith is severely shaken for many Americans. When we ask subjects in our health studies about their source of drinking water, we routinely find that in excess of 10 percent say they drink bottled water. Given that bottled water costs, on a volume basis, some thousand times tap water, this would seem an intolerable cost to consumers. Their willingness to pay demonstrates their understanding of a fact many of elected officials have failed to grasp, the cardinal importance of safe drinking water to the health of their families and the community. In the few minutes allotted to me today I have that single point to make: that clean drinking water occupies a crucial and unique place in safeguarding public health. This is more than a platitude: it is a rock solid fact of public health practice and experience.

We can, if we wish, look to vast parts of the developing world to see the frightful toll taken by lack of clean water, but this is too remote for most. More to the point we need only look at our own country as it was within memory of many of our older citizens. When my mother was born, in 1904, in LaCrosse, Wisconsin, waterborne disease was still killing tens of thousands of Americans yearly, and we were only a few years past the devastating and catastrophic cholera epidemics of the previous century.

If this seems like ancient history, it is not because it is so long ago, because it is not. It is because modern public health measures have transformed our experience of waterborne disease fundamentally, although not irreversibly. Chief among the public health triumphs of this century has been the provision of safe and healthful drinking water to most of our citizens. This single measure has done more to improve the health status of the community, and at lower cost, than any other achievement, not excepting immunization, advances in medical technology, or modern medical treatments and drugs. Community water supplies affect an entire community at once, providing an extraordinarily cost-efficient way to deliver a commodity essential to good health and quality of life.

But this same efficiency is a two-edged sword. A piped water supply is also an extraordinarily efficient way to deliver poisons and disease organisms to the whole community at once. This is not just a theoretical possibility, as 400,000 people in my hometown of Milwaukee have reason to know. While 100 of the 400,000 who took sick from contaminated water died and cannot make their wishes known, I feel to some extent I am representing them here today.

After a century of public health success we are again at a critical juncture. Our community water supplies are serving much larger populations with a raw water that has itself suffered from land use pressures that compromise its quality. We have budgetary constraints on our municipalities that cause them to scrimp on the kinds of invisible basic services we take for granted, like water treatment, placing them in charge of underpaid and poorly trained operators, which is like handing over a semitrailer going 100 miles an hour to someone with a learner's permit. We have a growing population of citizens especially vulnerable to water of marginal quality, such as those with compromised health or failing immune systems, like the frail elderly, MDS patients, or those on cancer chemotherapy. At the same time, the aging infrastructure of many of our major cities includes old and antiquated water treatment facilities that must now be updated or replaced, regardless of any new regulations. As these replacements are built, we are literally setting the Safe Drinking Water Act in concrete. The impulse of the moment will last for decades. As the old saying goes, act in haste, repent at leisure.

It is a cliché to say the devil is in the details, and of course this is true of the details of Amendments to the Safe Drinking Water Act. But there is more than enough satanic potential in the bottom line itself. Safe drinking water is fundamentally different from many other environmental programs. When you play around with drinking water quality you are playing with fire, perhaps the only instance where water can start fires, metaphorically speaking, rather than put them out. A water supply is a long lever, with the weight of the community's health at the other

end. Small changes in water treatment are magnified as large movements in health status.

Tampering with the Safe Drinking Water Act is almost certain to produce foreseeable consequences to public health. It is not worth the risk. In particular, I believe it is crucial that EPA be allowed to act promptly to protect our citizens from urgent threats to health, whenever revealed by solid and persuasive scientific evidence. As I understand it, the variety of procedural, study and analysis requirements now in the bill will severely hamper timely efforts to deal with imminent threats to health, whether it be to the elderly from microbial disease or to the unborn from toxic agents or by-products that may cause birth defects or spontaneous abortions. In addition, I agree with a wide range of public health and public policy opinion, ranging from environmental groups to Senator Simpson and ex-EPA Administrator William Ruckelshouse, that local communities must be strengthened and empowered to deal with local drinking water problems. The most powerful tool to accomplish this is knowledge and information. Local communities should, and must, be kept informed of how well their water utility treats their water, and this means prompt notification of exceedences and violations of healthbased standards.

In closing, it is with the utmost concern and urgency that I implore the Committee to tread with extreme caution in. Amending the Safe Drinking Water Act, a tool and resource that has made this country the envy of public health professionals around the world. Whatever your feelings about other EPA programs such as endangered species, wetlands and clean air, you must recognize that safe drinking water is different and unique, from the public health perspective. The risks are not speculative, but are starkly represented by days of work and comfort lost to illness and by the lives of our fellow citizens who died prematurely from contaminated water, even under the current Law. I don't claim the Act has been perfect in every detail, whether those details are thought devilish or not, only that it has worked remarkably well and its spirit must be retained and strengthened.

STATEMENT OF SENATOR LARRY PRESSLER, U.S. SENATOR FROM THE STATE OF SOUTH DAKOTA

Mr. Chairman, I am pleased to have been invited here today to express my views on the Safe Drinking Water Act and I commend Chairman Chafee and Senator Baucus, as Ranking Member of this committee, for their hard work in drafting this bill. Certainly, we need a uniform system of Federal laws and regulations to maintain the public health and safety of our drinking water. These laws must be reasonable. They must make sense.

The bill before us, S. 1316, would go a long way to bring common sense to safe drinking water regulations. This is good news for small cities and rural communities. For example, S. 1316 would require the EPA to provide sound scientific background for future drinking water standards. In addition, this legislation would grant flexibility to small water systems that cannot always afford the expensive treatment technology to comply with Federal regulations

By and large, S. 1316 represents a reasonable approach to drinking water regulation. However, let me point out a glaring example of how the unreasonableness of the current system has found its way into an otherwise good bill.

I am speaking of Section 9, which would require communities to regulate sulfate levels in drinking water supplies. This provision would require that communities provide bottled water as an alternative to water containing sulfate. This provision is similar to a proposed Environmental Protection Agency regulation that would require communities to limit sulfate in drinking water. Both of these standards are being proposed despite the fact there is no valid scientific showing of harm resulting from higher levels of sulfate.

Let me bring this issue closer to home. The sulfate regulation required by Section 9 would affect roughly one-quarter of all the water systems in south Dakota—108 of the 483 water systems in the State. The South Dakota Department of Environment and Natural Resources (DENR), which opposes both Section 9 and the EPA's proposed sulfate rule, has estimated that the costs of compliance for those affected water systems would be $40–60 million. That's just the initial cost of compliance. Small, rural communities in South Dakota should not be forced to pay such a high price to enforce a regulation that has no valid scientific justification.

Let me put these figures in real terms we can all understand. The largest of the 108 affected South Dakota communities is Madison, with a population of 6,395 people. Currently, the average water bill for each household in Madison is $13.75 per month. According to the South Dakota DENR, if Section 9 were enacted, the additional cost to each household would be almost $14 per month. That would mean an

average monthly water bill of $27.75—a 101% increase. Remember, this figure is for the largest of the affected communities.

Let's take Big Stone City, South Dakota, as another example. With a population of 670 people, Big Stone City has the median population of the 108 communities in South Dakota affected by the proposed rule. Currently, the average monthly water bill per household in Big Stone City if $9.80. If Section 9 becomes law, each household in that community would see its water bill rise about $12.00, for a total monthly bill of $21.80. That would be a dramatic 122% increase! Just imagine the impact this provision could have on communities even smaller than Big Stone City.

Mr. Chairman, what would these communities get in return for these shocking rate increases? Nothing. That's right. Nothing. For years, South Dakotans have been drinking water containing sulfate with no apparent adverse health effects. In fact, the Center for Disease Control is in the final phases of a study to determine whether the presence of sulfate in drinking water affects the health of infants. Preliminary findings suggest that there is no adverse health impact.

Unfortunately, this legislation borrows a page from the EPA playbook by trying to reduce sulfate in drinking water, even though it is not shown that would mean safer water. These plans are being made regardless of the enormous costs involved for small communities. This situation doesn't make sense.

Mr. Chairman, like all Americans, South Dakotans certainly want safe and healthy drinking water. But they want Federal rules that are reasonable, understandable, and flexible. I am pleased that we are finally taking steps to solve the problems associated with the current Safe Drinking Water law. I would be happy to work with the Chairman to develop language to reduce the impact of burdensome sulfate regulations on small cities and rural water systems in South Dakota and other States.

Again, I thank the Chairman for his leadership and for providing me with the opportunity to raise this issue before the Committee.

STATEMENT OF DONALD SATCHWELL, AMERICAN WATER WORKS ASSOCIATION

Good morning, Mr. Chairman and members of the committee. My name is Don Satchwell. I am a member of the Board of the East Green Acres Irrigation District, a community water system which provides drinking water to residents in and around Post Falls, Idaho. I have been a member of the Idaho Drinking Water Advisory Committee since its Inception in 1989. I am here on behalf of the Idaho Drinking Water Advisory Committee (DWAC) and the American Water Works Association (AWWA) to present the views of both groups on S. 1316 and reauthorization of the Safe Drinking Water Act (SDWA). Also with me is the President of the American Water Works Association, Karl Kohlhoff, from Mesa, Arizona.

Thank you for providing us the opportunity to meet with you and the Committee today. We commend you and Senator Kempthorne for your leadership in introducing S. 1316 and holding this hearing on the reauthorization of the Safe Drinking Water Act. The members of AWWA and the Idaho Drinking Water Advisory Committee have high praise for the long hours of hard work for many months that you, Senator Kempthorne, Senator Baucus and the staff members put in to the effort to reach an agreement on a bipartisan bill. We commend all of you for bringing forth a bipartisan, mainstream approach to protect America's drinking water.

The Idaho Drinking Water Advisory Committee (DWAC) was instituted by the Idaho Department of Health and Welfare, Division of Environmental Quality (DEQ) in 1989 to advise the DEQ on issues related to Idaho's drinking water program. The membership of the committee well represents the diversity of the drinking water supply community in Idaho, and includes water utility operators, elected officials, public works officials, legislators, and consulting engineers. The members of the DWAC have worked very hard in the last 6 years to maintain state primacy for the drinking water program and to develop and fund a responsive program for the people of Idaho. In fact, in 1993 the DWAC was the driving force in implementing a user-fee System to fund and implement the state drinking water program.

The American Water Works Association is the world's largest educational and scientific association for water supply professionals. The members of AWWA believe few environmental activities are more important to the health of this country than assuring the protection of water supply sources, and the treatment distribution and consumption of a safe and healthful supply of drinking water. Founded in 1881, AWWA now has over 55,000 members dedicated to water quality and public water supply. The association included public drinking water departments and authorities, private companies and individuals engaged in providing over 75 percent of the drinking water delivered to the American public. The membership of AWWA com-

prises the most extensive network of knowledge and experience for the whole spectrum of water supply concerns. The AWWA expertise encompasses managers and operators running public water systems, public health officials overseeing regulatory programs, engineers designing distribution systems, scientists analyzing water quality, researchers developing new treatment technologies, academicians studying innovative water management techniques, and educators imparting knowledge concerning water. AWWA stands ready to share this knowledge and experience with you.

The Idaho Drinking Water Advisory Committee supports a Federal drinking water program. However, we also believe the program should give states a great deal of flexibility in implementing drinking water regulations and that, in turn, the states should be able to give the local utilities a great deal of flexibility in complying with the rules and regulations.

It is important to remember that we can trust our local utilities. In my capacity as a member of the DWAC, I have attended many public hearings and other meetings with drinking water utilities in Northern Idaho and at all these meetings every utility was emphatic that they want to provide safe, clean drinking water to their customers.

In order to accomplish that they need to have the ability to provide common sense solutions. The Idaho Drinking Water Advisory Committee and the American Water Works Association endorse S. 1316, The Safe Drinking Water Act Amendments of 1995, because it brings common sense to the goal we all share—providing our citizens with safe drinking water. Common sense is what Idaho uses to guide the activities of our state's drinking water program.

S. 1316 represents a rare legislative triple play: it is an opportunity to protect public health, strengthen the existing law, and streamline cumbersome regulations. As the guardians of America's safe drinking water, AWWA believe S. 1316 is a major step forward in the direction of better public health, safer drinking water, and more responsive government. The sensible reforms contained in this bill represent a common sense solution that supports both environmental protection and regulatory reform. The members of AWWA, throughout the Nation, are passionate about protecting the nation's drinking water supply. The sensible, responsible reforms contained in S. 1316 maintain the current high standards of AWWA. I will highlight the major reforms of S. 1316 in the remainder of the statement.

NATIONAL DRINKING WATER REGULATIONS

We commend you for your efforts to improve drinking water regulations. One of the greatest challenges for those who safeguard the nation's drinking water has been well-intentioned, but out of date, Federal regulations. Updating the standard setting process for drinking water contaminants will strengthen the SDWA by focusing regulations on contaminants known to pose the greatest public health risks. S. 1316 will require the use of more comprehensive scientific analysis, occurrence data, health risk reduction benefits and best available technology. The elimination of unnecessary monitoring, the flexibility in selecting and regulating contaminants, and the flexibility in compliance and review dates, are much needed welcome reforms.

We believe that a significant reform in S. 1316 is requiring the Environmental Protection Agency (EPA) to conduct a benefit-cost analysis for each new standard before it is promulgated and authorizing EPA an alternative process for setting standards when the health benefits are not justified by the costs or when competing health risks require balancing. Most importantly, health protection benefits will not be weakened by the new alternative standard setting process.

The existing standard setting process in current law is flawed and can lead to standards which do not make sense from either the economic or public health perspective in some cases. The present standard setting process is technology driven and can result in driving standards far below health protection benefit levels at very high cost and in some cases creating health risks that may be worse than the contaminant being regulated. Though S. 1316 retains the current standard setting process in the statute, the new scientific requirements, cost-benefit analysis and alternative standard setting processes may overcome the flaws in the current law.

The publication of the scientific data and incremental health risk reduction considerations required in S. 1316 will provide the public the opportunity to see the health benefit value for the expenditure of critically scarce public and consumer dollars. This is not an issue of cost versus public health protection. Public health protection is the prime consideration. The public may be willing to spend additional money for safer drinking water; however, it is not fair to force the public to pay more when there is no real or extremely limited safety improvement in their water.

The public will now be in a position to judge for itself whether or not a standard is justified and public health adequately protected.

We believe that it is a major step forward that the Congress recognizes that some contaminants present unique regulatory challenges. S. 1316 identifies radon, arsenic, sulfate and disinfection by-products as anomalies which require special consideration. Radon, arsenic and sulfate are naturally occurring substances which are found in some drinking water supplies. The currently available scientific information is of questionable value in determining a standard for drinking water. EPA has stated that additional research on these substances is warranted prior to promulgating a regulation.

Radon presents a threat from inhalation yet the potential contribution of drinking water to this radon threat is, on average, far below the naturally occurring ambient radon levels in air in most cases.

Arsenic has not been found to be a health threat at the very low levels naturally found in some waters. Arsenic also is a trace element essential to human health. The EPA Science Advisory Board has recommended further study of the health effects of arsenic.

Sulfate has been found to cause temporary gastro-intestinal discomfort for those who do not normally drink water with a natural sulfate content. It is of primary concern to travelers.

The regulation of disinfection by-products requires a tradeoff between the potential chronic chemical risk versus the immediate microbial risks from reducing disinfectants. S. 1316 has specifically endorsed the use of negotiated rulemaking in developing a drinking water regulation for disinfectants and disinfection by-products and has provided an alternative process for setting a standard when competing health risks must be balanced. Although EPA has used negotiated rulemaking in developing a disinfection by-product regulation, some have suggested that the results may not be lawful under the existing SDWA. S. 1316 has corrected this uncertainty.

DRINKING WATER SUPPLY PROTECTION

The source water quality protection partnership proposed in S. 1316 is a major step in the right direction to protect drinking water sources. Source water protection is an essential component of the AWWA multiple barrier concept in providing safe drinking water. Source water protection not only may help reduce the cost of treating water but will, more importantly, help to prevent outbreaks of disease or violations of drinking water standards caused by water pollution overwhelming the treatment capacity of a public water system.

We believe that there should be a stronger link between the safe Drinking Water Act and the pollution prevention provisions of other statutes, such as the Clean Water Act, to protect drinking water sources. The source water quality protection program proposed in S. 1316 would provide a mechanism to bring the resources of existing programs together to address the problem of source water pollution.

We advocate a voluntary partnership program using the community-based environmental protection approach to provide a means for focusing existing programs on source water protection. The impetus or imperative that source water protection programs will be implemented will come from the communities which need their drinking water sources cleaned-up and protected. S. 1316 provides the framework for bottoms-up, non-regulatory common sense solutions to harness the initiative and creativity of communities in addressing water pollution issues.

CAPACITY DEVELOPMENT

We strongly believe that the proliferation of public water systems which do not have the technical, managerial and financial capacity to comply with the monitoring and treatment requirements of the SDWA must be reversed. If the goals of the SDWA are to be met and the American people are to be assured a safe supply of drinking water, Congress must enact policies which will facilitate this reversal. However, we believe that each state should establish its own capacity development program. A rigid prescriptive Federal program is not the solution and should be resisted by the Congress. The fact that the effective capacity development programs of states such as Washington, Maryland and Connecticut are all substantially different in content points to the need to allow the development of solutions on a state-by-state basis.

We believe that S. 1316 has created the right balance between the Federal and states roles in capacity development by establishing programs for technical assistance and incentives for operator training. Restructuring and state capacity development programs. This is a step in the right direction to encourage the solution of

local issues which have a national effect. We strongly urge the Congress to pass the capacity development provisions of S. 1316.

RESEARCH AND TECHNICAL ASSISTANCE

As a scientific and educational association, AWWA is particularly pleased with the emphasis placed on research in S. 1316. We strongly support the authorization of research funds and will urge the Congress to fully appropriate these research funds. In this period of economic constraint and down-sizing the Federal Government, we must be mindful of the functions that a Federal Government agency can do better than other levels of government. Health effects research to form the basis for sound drinking water standards is one of the most effective use of Federal funds. Increased research funds will be needed to do the very necessary analysis required by S. 1316.

We do note, however, that some of the provisions for technical assistance, such as in Section 12 and Section 15, are limited to institutions of higher learning. AWWA recommends that this restriction be removed from S. 1316 so that other nonprofit organizations which have the required expertise may be eligible for consideration.

DRINKING WATER STATE REVOLVING FUND

We support a drinking water state revolving fund (SRF) to provide loans to public water system to assist in compliance with the Safe Drinking Water Act. Grants from the Federal Government to capitalize the SRF would help fund the Federal mandates of the Act.

The SRF proposal in S. 1316 provides flexibility to make the most effective use of the funds for providing safe drinking water. The SRF will provide financially disadvantaged communities the opportunity to finance much needed improvements to their drinking water infrastructure to provide safe drinking water for the people in the community. Federal funding of the SRF leverages local dollars and provides very tangible benefits for the American people, both in terms of safe drinking water and jobs in the community.

As you are well aware, the cities, towns, small communities, and other public water systems in this country face a daunting task in complying with the many Federal environmental statutes that are now being implemented. Among the most critical of these challenges is ensuring the provision of clean, safe drinking water. Unlike other infrastructure facilities, drinking water has not received the extensive level of Federal support historically available for other programs through the highway trust fund or through the Clean Water Act for wastewater construction grants and loan programs. Much of the nation's drinking water infrastructure is aging and in need of substantial capital improvements to comply with present drinking water regulations. As more and more regulations are implemented under the Safe Drinking Water Act, the need for public water system improvements grows ever larger.

AWWA traditionally has been opposed to providing direct grants and subsidies to public water systems. We believe that this practice generally perpetuates and encourages inefficient operation of water utilities. The Federal Government should not be in the business of perpetuating nonviable water system. We believe that the cost of treating and delivering water should be reflected in the rate structure; that capital investment should be amortized and reflected in the rate structure and that water utilities should be managed on an economic self-sustaining basis. However, we recognize that some communities or public water systems, governmentally or privately owned, may not have access to money markets to sufficiently finance needed infrastructure investment to comply with the Safe Drinking Water Act. The SRF will be especially beneficial to these communities. Remote small public water systems do not have the option to restructure or develop alternative water supplies in many cases. AWWA supports the use of the SRF to meet the needs of these public water systems. We believe that the SRF provisions of S. 1316 encourage the development of public water systems capable of complying with the Safe Drinking Water Act and providing safe drinking water to the American people.

In addition to providing loans to communities for drinking water infrastructure projects, the SRF will also provide a means for funding programs which are necessary to provide safe drinking water such as state source water protection programs and capacity development programs, without putting an unfunded mandate on state and local governments.

Authorization of the SRF is particularly critical to save FY96 and previous appropriations.

ENFORCEMENT AND CITIZEN SUITS

The present Safe Drinking Water Act is focused on penalty enforcement and allows citizen suits when a state has already taken enforcement action. We believe that the focus of Safe Drinking Water Act enforcement must be on assisting public water systems to comply. The measure of success should not be the number of penalties but the number of systems brought into compliance.

Enforcement must focus on assisting systems to comply, respect the role of the state as the "primary enforcement authority" and protect public water systems from citizen suits when a state or the EPA has brought judicial or administrative action on a violation. We believe that the provisions of S. 1316 have begun the process of shifting emphasis to compliance assistance and strengthening the role of the states in enforcement. However, S. 1316 is silent on the need to reform the citizen suit provision.

Citizen suits are designed for citizens to take judicial action when the appropriate government agency is not taking action to enforce the law. The Safe Drinking Water Act, however, allows citizen suits against a public water system when the system is operating in compliance with a Federal administrative order or a state administrative or judicial order. Unnecessary citizen suits can place a financial burden on communities another form of an unnecessary Federal mandate. Citizen suits against a public water system under these circumstances add nothing to public health protection. The appropriate government agency would already have taken enforcement action. We urge the Congress to consider amending the Safe Drinking Water Act in order to address this potential abuse of judicial process.

CONCLUSION

Thank you for this opportunity to present our views. We appreciate the time and consideration given us during recent months. We look forward to continuing to work with you and the committee staff on drinking water reauthorization issues to ensure passage of S. 1316 in the Senate.

This concludes our statement on S. 1316 and the reauthorization of the Safe Drinking Water Act. I would be happy to address any questions or comments that you may have.

STATEMENT OF GOVERNOR GEORGE V. VOINOVICH

Chairman Chafee, Senator Kempthorne, and members of the Committee, it is a pleasure to appear before you today to discuss the need for reform of the Safe Drinking Water Act and urge your strong support for S. 1316, the Safe Drinking Water Act Amendments of 1995.

I am particularly pleased to be here today in support of Senator Kempthorne's bill. Once again, Senator Kempthorne has proven his understanding of the concerns of states and local governments and his commitment to pursuing common-sense reforms that enhance the Federal-state-local partnership.

State and local elected officials across the country care deeply about the environment and the quality of our drinking water. We work hard in our own communities to protect our citizens, and appear before you today with a deep commitment to environmental protection.

I was the father of the Ohio Environmental Protection Agency when I served in the legislature and was responsible for stopping oil and gas drilling in the Lake Erie basin. As Governor, I have increased funding for environmental protection by over 60 percent.

In addition, Ohio is a national leader in developing creative solutions to environmental problems in partnership with the private sector. We implemented an innovative voluntary brownfields program, which empowers the private sector to clean up hazardous waste sites using state standards. Second, we have been recognized for the tremendous private sector involvement in our voluntary pollution prevention program that aims our resources where they matter most—preventing pollution before it occurs.

Our challenge is to determine how best to protect the environment and the health of our citizens using limited resources. We need to do a better job of setting environmental priorities and spending our resources wisely. We should not do things that are more form than substance or simply because of appearances.

Ohio is leading the Nation in using cost benefit analysis as part of our mission to work harder and smarter and do more with less. We are in the process of implementing a statewide comparative risk project that identifies our greatest environ-

mental risks to set priorities for using finite resources for cleaning up and preventing pollution in our state.

It is crucial that the Federal, state and local governments work in partnership to determine how we can best allocate resources for environmental protection. Right now, local governments spend 12 cents of every dollar on unfunded Federal mandates, primarily on environmental programs. By 1998, that figure will increase to 25 of every dollar, a burden which dictates their priorities. Local communities should be given more flexibility to find the best solutions for their environmental challenges.

Mr. Chairman, you, Senator Kempthorne, and the cosponsors of this legislation are to be commended for your work to enhance the safety of our nation's drinking water and to improve the-process for more efficient regulation of this priceless resource. As cosponsors of this legislation, you understand how important it is for us to set priorities to combat the most dangerous risks.

As everyone knows, under Senator Kempthorne's leadership we were able to pass comprehensive unfunded mandate reform legislation, S. 1, earlier this year and have these reforms signed into law by the President. As a former mayor, I believed it was extremely important that state and local government organizations work more closely together on issues of mutual interest. I am sure Senator Kempthorne will agree that the strength of the state-local partnership in support of mandate relief legislation was a key factor in its passage.

Governor Nelson and I participated in a meeting with the leadership of the various state and local government organizations this past June to set new priorities following the signing of the mandate bill. At that meeting, we agreed that passage of effective Safe Drinking Water Act reform legislation was our top priority.

States and local governments all too often are saddled with costly requirements from a host of environmental regulations that provide negligible benefits for human health or the environment. We need to do a much better job ensuring that regulations' costs bear a close relationship with its benefits.

The Safe Drinking Water Act is a perfect example of an arbitrary environmental statute in dire need of reform. After all, the very essence of the bill is a requirement that EPA promulgate 25 new contaminants every 3 years that communities must test for, regardless of whether or not they actually occur in a region's drinking water.

At this untenable pace local communities could have to monitor as many as 161 contaminants by 2001. Instead of prioritizing health risks and providing the means to address them, the current law is a one-size-fits-all program. It forces our water quality experts to spend scarce resources searching for dangers that often do not exist rather than identifying and removing real health risks from our drinking water.

For example, Ohio EPA found that of 43 synthetic organic chemicals, mainly pesticides, that the Environmental Protection Agency (EPA) requires water systems to test for, only 9 were used in the State in quantities that might be detected.

Ohio has used the waiver process under the current law to save local communities $8 million in monitoring costs over 3 years, but this process is bureaucratic and resource intensive, involving thousands of hours of staff work. Our staff resources could be better used on field work to address serious health concerns such as bacterial contaminants. Ohio and other states believe there must be a better, more effective way to protect our drinking water.

In a meeting last December, I outlined for EPA Administrator Browner the unjustifiable burdens this Act often imposes on local communities. Administrator Browner readily agreed and stressed that the statute provides her with little discretion to set sound standards and requirements. As a result, she said she finds herself promulgating regulations with which she does not agree because impending court orders force her to act.

The true test of the strengths of this legislation is that it would fix these faults in current law while enhancing the protection of our nation's supply of drinking water. Instead of developing an arbitrary list of contaminants, the bill focuses attention on regulating contaminants that are likely to occur in drinking water at concentrations that pose health concerns for the public.

Significantly, the Administrator would have substantial new discretion to set appropriate standards to protect human health. As a long-time proponent of regulatory reform, I am particularly pleased that the bill requires EPA to conduct an analysis of the incremental costs and benefits of alternative standards and provides the Administrator with the option of choosing between a standard where the benefits justify its costs or, when health considerations dictate, the maximum feasible standard.

This legislation also permits states to develop their own monitoring schedule for their systems, unless EPA disapproves a state plan. No longer will states be re-

quired to force communities to test continually for contaminants that do not exist in their water systems. We will be able to better use our resources to address health risks instead of spending precious time and resources convincing EPA to waive requirements that do not threaten our communities.

In a broader sense this bill helps restore states as partners with the Federal Government. Too often we have been viewed as part of the regulated community, not trusted with significant authority to protect the same citizens we were all elected to serve. In January testimony before the Senate Budget and Governmental Affairs Committees in support of the mandate relief bill, I said: "This bill represents the first step in a new, long-awaited process of Congress treating states and local governments as equal partners, not as special interests."

The bill before us today further advances this principle, which is so crucial to effective governance and governmental accountability.

Also as Governor of a large and diverse state, I am very pleased this bill provides substantial relief for smaller communities. Of more than 1400 community water systems in Ohio, 90 percent serve small communities with fewer than 10,000 people. While these communities simply do not have the resources larger cities do, current law does not sufficiently recognize this reality. This legislation provides states and EPA with the flexibility and resources to better and more appropriately protect drinking water in small systems through a mix of enhanced financial and technical assistance, monitoring waivers, variances, and capacity development requirements.

Other key strengths of this legislation include the authorization of State Revolving Funds (SRFs) to provide financial assistance to communities to meet the many requirements of the Act and funding for research on health risks of drinking water contaminants. Local communities are enthusiastic about these provisions.

I would like to point out, however, that though this bill is a significant improvement over current law, many compromises have been made during the drafting process. States and local governments have not gotten all that we requested.

I am very pleased with the broad bipartisan support of the Committee, but urge you to consider that many amendments already have been incorporated in the bill during months of discussion prior to introduction. States and local governments would be reluctant to support further changes in the bill. In particular, I urge the Committee to oppose any amendments to weaken EPA's authority to establish standards based upon the relationship of costs and benefits. We need to balance the challenges of protecting human health and plain common sense.

Mr. Chairman and members of the Committee, the Safe Drinking Water Act Amendments of 1995 is a strong bill to improve the regulation and safety of our nation's drinking water while substantially relieving arbitrary burdens on states and local communities. Just as the state and local government coalition was united on our mandate relief bill, I am also very pleased we have come together on this bill on a bipartisan basis. I urge its expeditious approval by the Committee.

Thank you.

STATEMENT OF HON. JEFFREY N. WENNBERG, MAYOR, RUTLAND, VERMONT

Mr. Chairman, members of the committee, I am Jeff Wennberg, Mayor of Rutland, Vermont and immediate past chair of the committee on Energy, Environment and Natural Resources for the National League of Cities. It is indeed an honor for me to offer this testimony on behalf of the National League of Cities and the National Association of Counties and our 19,000 members.

There is no public health responsibility of greater concern to local elected officials than the provision of consistently safe, plentiful and affordable drinking water. This is the only product or service we provide that directly affects the health and well being of every one of our constituents, every day.

Unfortunately, the Safe Drinking Water Act as amended in 1986 has more often than not confounded our efforts to meet this daunting responsibility. This centralized, arbitrary, command-and-control Federal intrusion has well served the interests of Washington-based bureaucracies and environmental special interests. It has, however, inadequately serviced the local, state and national interest in protecting and preserving the public health. I need only remind the committee that it was under the current law that an unregulated parasite paralyzed Milwaukee in 1992.

It is therefore my great pleasure to offer the wholehearted support of the National League of Cities and the National Association of Counties for the Safe Drinking Water Act Amendments of 1995.

CONTAMINANT SELECTION AND STANDARD SETTING

The two most important revisions contained in your amendments are those dealing with the process by which new contaminants are selected and the process by which regulatory limits on the presence of contaminants are set.

Under current law, regulated contaminants are chosen by a process which makes about as much sense as selecting Nobel Laureates with an MTV 1–900 poll. Your proposal to base contaminant selection on known health effects and the proven occurrence of the contaminant in drinking water will ensure that the public's resources are not wasted searching for phantoms in the water.

Your amendments grant the Administrator the discretion to consider health benefits and costs when setting new contaminant standards. Washington-based environmental special interests will charge that this language will "gut" the law and allow communities to act with impunity while their citizens waste away.

Members of the committee, I speak for my peers when I say there is no one in this city who has greater concern than I for the safety of the water consumed by me, my children, my neighbors and everyone who decides whether I am employed.

Proponents of the status quo will argue that we cannot place a price on a human life; that when it comes to the safety of our drinking water, cost must not be an issue. As an elected official, I realize the peril associated with publicly challenging this premise.

Nonetheless, if this assertion was true we wouldn't be here. If the cost of providing perfectly risk free water was not an issue, then the Federal Government would simply budget 100 percent of all the funds necessary to achieve this goal. You have not done so, nor have the states, nor have the localities. And we have not done so because there is a very real limit to how much the American people can and will spend on risk free water, assuming that such a thing is even possible.

If we are to accept the responsibility to do the very best job possible using limited resources, we must first reject the notion that any expense is justified. We must direct our first resources against the greatest threat to public health, and then the next to the second greatest, and so on.

The only way this can be done is to choose contaminants and set standards on the basis of health risk and cost. To do otherwise is to risk squandering resources on relatively low priorities while very real threats go unaddressed. *Cryptosporidium* was unregulated when 400,000 Milwaukeeans were infected by the parasite.

The current system of standard setting, as defended by some Washington-based environmental special interests, has not only failed to protect the public health, it has in fact put it at greater risk.

REGULATORY FLEXIBILITY

Throughout the amendments you have recognized that needs, resources and priorities vary from system to system and state to state. The amendments grant greater flexibility to states in the use of funds and the administration of the program.

Just last week the city of Rutland placed into service a new $6. 1 million filtration plant. This is the first time in the 140 year history of our waterworks that our water has been filtered. Bonds for the plant, which have increased water rates 230 percent were approved by the voters several years before the surface water treatment rule mandated filtration.

The reason we have gone so long without filtration is because our surface water source is extremely pure. In fact, 80 percent of the contaminants for which we are required to test have never been found in Rutland City water. Yet year after year, quarter after quarter, we dutifully sample and test, knowing from past experience what the results will be. This effort costs about $12,000 per year (not including lead and copper rule expenditures). In a system of 5,300 connections, $12,000 is a manageable sum, but every dollar spent needlessly is a dollar that could have been expended protecting the public health. And what about small systems? $12,000 is a huge sum for a system with 50 connections. Systems in Kansas are reported to be spending more in the search for non-existent contaminants than on treatment for those that actually occur. The Safe Drinking Water Act Amendments of 1995 grant states much needed flexibility to direct scarce resources to their most productive use.

SMALL SYSTEMS

In spite of the problems with the law, it has served to increase protection of public health. Under the 1986 amendments, the standards are tested against the capabilities of large and moderate systems. The failures of the existing law are most appar-

ent from the perspective of small systems. These systems often lack both the technical expertise and financial capacity to comply.

The 1995 amendments recognize the realities faced by these systems with set-aside funding for technical assistance, improved variance powers and research on feasible technologies for small and micro systems.

We have already heard objections to these provisions. But in Vermont this is a huge issue with no simple answer. I know of a fire district water system serving thirty households that has been on a continuous boil water order for 13 years. If we simply mandated compliance and prosecuted those who failed to comply, the lawyers would be kept busy, but the water would still be undrinkable.

Only with re-establishment of a working partnership between the Federal and state and local government will we have any hope of insuring that all small systems provide safe water.

SOUND SCIENCE

The amendments also recognize both the complexities and uncertainties associated with the contaminants Arsenic, Radon, and Sulfate. The special treatment of these three contaminants, coupled with the authorization to set aside $10 million per year for research, focusing on *Cryptosporidium* and disinfection by-products, is a greatly appreciated response to NLC's long-standing call for sound science before rulemaking.

STATE REVOLVING FUND

We applaud your recognition of the need of communities for financial assistance through the creation of the State Revolving Funds. We are most especially pleased that the bill makes loan subsidies or loan forgiveness available for disadvantaged communities regardless of their population. We have long recognized that "size" and "need" are not synonymous and thank you for your acknowledgement of this fact as well.

It is my belief that the success of the Clean Water Act was due principally to the availability of substantial Federal financial assistance. The failure to provide similar assistance for drinking water improvements—especially for small and financially strapped communities—is one reason for the disappointing performances of the Safe Drinking Water Act.

We also support the proposed set asides included in the Drinking Water SRF in S. 1316. In fact, NLC recently adopted policy calling for exactly these types of activities to be financed by any new funding made available for drinking water purposes. Local government officials believe it is essential to have sufficient resources for health effects research, to have adequately financed state programs, to provide grants for small communities that will never have the resources on their own to meet the Act's requirements or the ability to consolidate with other systems, and to initiate a source water protection program.

Not addressed in your newly created SRF is a residual issue from the Clean Water Act SRF. In developing guidance for state implementation of the clean water loan fund, EPA authorized states to use interest collected from local governments to meet the state matching requirements. At least 15 states now use this authority. From the local government perspective, this authority is a disincentive to provide and reduces the opportunities for local governments to obtain interest free loans. It is also something of an equity issue. Local governments must repay the loans and pay interest on loans made with Federal money. We believe the states have a similar obligation to contribute to assuring safe drinking water supplies.

SOURCE WATER PROTECTION

While we would have preferred to see a far stronger program to protect sources of drinking water, we understand the political complexities of moving too far, too fast. The creation of a source water protection provision in your bill will, however at the very least, create a new, and hopefully, broader awareness about the need to engage in and enhance practices that protect areas that impact on drinking water supplies.

ENFORCEMENT/CITIZEN SUITS

The most disappointing provisions in S. 1316 are the those with respect to enforcement and the absence of protections from citizen suits.

Water suppliers do not pollute—it is their responsibility to remove pollutants that occur in sources of drinking water for reasons beyond their control. However, we believe the changes you are proposing to make in the law—sound science, new stand-

ards that reflect contaminants found at levels of public health concern in drinking water supplies, rational timeframes for compliance with new standards, and additional assistance both financial and technical—will obviate the need for enforcement actions against water suppliers.

It is unfortunate that to achieve a compromise, provisions which would have protected municipal water suppliers from citizen suits if they were in compliance with administrative or judicial orders, had to be dropped. Endless litigation serves only to divert resources from the intended purposes of the drinking water act. From our perspective it makes more sense to use those resources for compliance.

THE DEBATE

Mr. Chairman, I have recently witnessed Washington-based environmental special interests employ sound bite scare tactics to obstruct needed environmental reforms. Aside from Superfund and stormwater, the one environmental law that desperately needs reform is the Safe Drinking Water Act. Governors, state regulators, local elected officials and public and private water system operators are unanimous in the belief that this law does not adequately protect the public health.

The environmental special interests have invested a great deal within the beltway. Their ability to pursue their agenda, which in most respects is admirable, has historically depended upon their access to decisions made here and in the national regulatory bureaucracies. Any effort to grant more discretion to their states and localities is seen as an attack on their ability to influence those decisions.

Unfortunately, if we fail to grant more authority and flexibility back to the states and if we fail to prioritize the risks themselves, we will ultimately fail to protect the public health. There must never be another Milwaukee.

The Safe Drinking Water Act Amendments of 1995 will fix a broken law. As the elected official who is held most responsible for the safety of the water that my constituents drink, I urge you to reject the arguments issued by the defenders of the status quo. The Safe Drinking Water Act Amendments of 1995 will result in cleaner safer drinking water.

I want to thank the Committee for your excellent work on this bill and for providing this opportunity to encourage its passage.

CHLORINE CHEMISTRY COUNCIL

A Council of the Chemical Manufacturers Association

November 2, 1995

Senator John H. Chafee, Chair
Senate Environment and Public Works Committee
Dirksen Senate Office Building
Washington, D.C. 20510

Dear Senator Chafee:

The Chlorine Chemistry Council (CCC), a business council of the Chemical Manufacturers Association, appreciates this opportunity to submit the enclosed testimony for the record of the October 19, 1995, hearing of the Senate Committee on Environment and Public Works on S. 1316, the Safe Drinking Water Act Amendments of 1995. The members of the CCC include both producers and users of chlorine and chlorine-based products. **We urge members of this committee to remove the cost-benefit analysis exemptions for the disinfectants/disinfection byproducts (D/DBP) rulemaking as found in section 1412(b)(6)(C) of S. 1316.**

One of the most important uses of chlorine chemistry is the disinfection of drinking water. The chlorine industry, including members of the CCC, assists public water systems throughout the U.S. to fulfill a fundamental public health responsibility - the provision of safe, plentiful and affordable drinking water to the public. Indeed, 98% of public water systems that disinfect their drinking water utilize cost-effective chlorine or chlorinated compounds as disinfectants.

The formidable costs associated with the D/DBP rulemaking emphasize the need for S. 1316 to authorize the EPA to utilize cost-benefit analysis in the D/DBP rulemaking. In fact, as discussed in the recently published Congressional Budget Office Study on the SDWA, the D/DBP rule is the most costly rule currently propsed by EPA under the SDWA. Further, the degree to which the rule would reduce the hypothetical cancer risk is extremently uncertain. EPA's regulatory impact analysis indicates that Stage I alone will cost $4.4 billion in capital and nearly $500 million per year in increased operations and maintenance. Stage II would add billions more to capital costs. Ultimately, the consumer will bear this unfunded mandate on public water systems.

The CCC urges **members of this committee to remove the cost-benefit analysis exemptions for the disinfectants/disinfection byproducts (D/DBP) rulemaking as found in section 1412(b)(6)(C) of S. 1316.** I would be pleased to discuss our concerns with you further. I can be reached at (202) 887-4770.

Sincerely,

C. T. Howlett, Jr.
Vice President & Managing Director, CCC

Enclosures

CHLORINE CHEMISTRY COUNCIL

A
Council
of the
Chemical
Manufacturers
Association

WRITTEN TESTIMONY

OF THE

CHLORINE CHEMISTRY COUNCIL

BEFORE THE

SENATE ENVIRONMENT AND PUBLIC WORKS COMMITTEE

ON THE

SAFE DRINKING WATER ACT AMENDMENTS OF 1995

NOVEMBER 2, 1995

Chlorine Chemistry Council • 2501 M Street, NW Washington, DC, USA 20037 • Tel. 202-887-1100

I. Introduction

The Chlorine Chemistry Council (CCC), a business council of the Chemical Manufacturers Association, appreciates this opportunity to submit this testimony for the record of the October 19, 1995, hearing of the Senate Committee on Environment and Public Works on S. 1316, the Safe Drinking Water Act Amendments of 1995. The members of the CCC include both producers and users of chlorine and chlorine-based products.

II. The Importance Of Chlorine And The Products Of Chlorine Chemistry

The CCC was established in 1993, in part, to promote sound and responsible uses of chlorine and the products of chlorine chemistry. Chlorine chemistry is integral to the manufacture of 85% of all pharmaceuticals, including drugs that treat heart disease, hypertension, ulcers, leukemia, arthritis, pneumonia, allergies and symptoms of the common cold, as well as vitamins. Chlorine is also critical in the manufacturing process of about 96% of crop-protection chemicals.

One of the most important uses of chlorine chemistry is the disinfection of drinking water. The chlorine industry, including members of the CCC, assists public water systems throughout the U.S. to fulfill a fundamental public health responsibility - the provision of safe, plentiful and affordable drinking water to the public. Indeed, 98% of public water systems that disinfect their drinking water utilize cost-effective chlorine or chlorinated compounds as disinfectants. Importantly, the advent of chlorine as a drinking water disinfectant in the early 1900s was a public health triumph, directly responsible for the drastic reduction and near elimination of waterborne diseases such as typhoid fever and cholera that had plagued our nation and continue to inflict tremendous suffering in many parts of the world today. The World Health Organization estimates that 25,000 children die from waterborne diseases each day in parts of the world where chlorinated drinking water is not available.

III. The Hypothetical Risks Posed By Disinfection Byproducts Must Be Viewed In The Context Of The Much Larger Threat Of Waterborne Infectious Disease

In general, S. 1316 makes a number of important changes and improvements to the current Safe Drinking Water Act (SDWA), particularly by incorporating the use of risk assessment and cost-benefit analysis in developing drinking water regulations to control health risks posed by contaminants. However, the CCC has particular concerns with certain provisions in S. 1316 on disinfectants used to protect the drinking water supply, and disinfection byproducts.

On July 29, 1994, EPA proposed Stages I and II of the disinfectants/disinfection by-products (D/DBP) rule, to control disinfection byproducts which are produced when disinfectants, including chlorinated compounds, are used to disinfect drinking water. This proposed rule was based on a consensus reached by the negotiated rulemaking (reg-neg) committee established by EPA. The chlorine industry, however, was not invited to participate on this committee, despite its critically important role in disinfecting 98% of our nations' public water supply. As a result, both the process and outcome of the reg-neg committee were deficient, particularly in regard to assessing the costs and benefits of addressing the residual risks of disinfection byproducts.

Regulating disinfection byproducts by altering the amount or type of disinfectant used by drinking water systems must be done with great caution. Reducing the use of chlorinated disinfectants to reduce byproduct formation and the hypothetical risks posed by these byproducts could significantly increase waterborne infectious disease.[1] These hypothetical risks must always be considered in the context of the much larger threat of waterborne infectious disease. The 1993

[1] G.F. Craun, et al., Balancing chemical and microbial risks of drinking water disinfection, Part I. Benefits and potential risks, 43 J. Water SRT-Aqua, 192, 1994. This article (and Part II, Managing the risks) are based on information presented at the First International Conference on the Safety of Water Disinfection: Balancing Chemical and Microbial Risks, held in Washington, August 31 - September 3, 1992.

Milwaukee cryptosporidium outbreak which caused nearly 400,000 illnesses and over 100 deaths, is a sobering reminder of the very real devastation that can be posed by waterborne infectious disease.

The CCC is pleased to note that S. 1316 permits the EPA, when establishing a particular contaminant level, to consider the health risks posed by other contaminants, including waterborne pathogens, when establishing a particular contaminant level so as to assure that overall risks from contaminants are minimized. This authority extends to include contaminants addressed in Stage I of the D/DBP rule. It is not clear, however, whether the authority also covers contaminants in Stage II of the D/DBP rule. The CCC urges this committee, therefore, to modify section 6 (b) of S. 1316 to make explicitly clear that this authority extends to include both Stages I and II of the D/DBP rule.

IV. Cost-Benefit Analysis Is An Important Tool In Controlling Drinking Water Contaminants

We are particularly pleased to see that S. 1316 authorizes the EPA to utilize cost-benefit analysis in the SDWA standard setting process. Regulations to protect the public health, such as those stemming from the SDWA, should yield the greatest risk reduction with the most cost-effective allocation of limited resources. The bill's important cost-benefit provisions are a clear recognition that under the current SDWA large costs can be imposed on public water systems without commensurate public health benefits. The Chemical Manufacturers Association has submitted written comments to this committee in which a number of important suggestions for improvements to S. 1316 regarding risk assessment, risk prioritization and cost-benefit analysis are made. The CCC urges the members of this committee and the Senate as a whole to adopt CMA's recommendations.

As noted, S. 1316 authorizes the EPA to minimize overall risk in the D/DBP rulemaking. However, S. 1316 explicitly prevents the EPA in D/DBP rulemaking from maximizing health risk

reduction benefits at a cost that is justified by the benefits. The CCC is troubled by this anomaly. How can overall risks be reduced, particularly those risks posed by microbial contaminants, without critically analyzing the anticipated costs and benefits associated with the D/DBP rulemaking? Indeed, cost-benefit analysis allows the comparison of chlorination with alternative disinfectants, and hypothetical cancer risks from D/DBPs with those very real risks posed by microbial contaminants. In addition, providing for cost-benefit analysis in the D/DBP rulemaking would serve to address, in part, the deficiencies of the reg-neg process.

Cost-benefit analysis also serves to better utilize the information anticipated to be generated from EPA's Information Collection Rule (ICR), which has yet to be promulgated. Through the ICR, EPA will gather information on the parameters that influence DBP formation and occurrence of DBPs and microbial contaminants in drinking water. Specifically exempting the D/DBP rulemaking from cost-benefit analysis dramatically weakens the EPA's ability to strengthen public health protection through improved decision making and risk management.

The formidable costs associated with both Stages I and II of the D/DBP rulemaking emphasize the need for S. 1316 to explicitly authorize EPA to utilize cost-benefit analysis in the D/DBP rulemaking. In fact, the D/DBP rule is the most costly rule currently propsed by EPA under the SDWA, and the degree to which the rule would reduce the risk of cancer is extremently uncertain.[2] EPA's regulatory impact analysis indicates that Stage I alone will cost $4.4 billion in capital and nearly $500 million per year in increased operations and maintenance. Stage II would add billions more to capital costs. Ultimately, the consumer will bear this unfunded mandate on public water systems.

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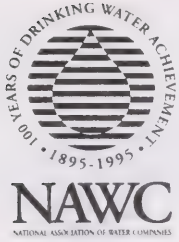
[2] Congressional Budget Office, 104th Cong., 20 Sess., The Safe Drinking Water Act: A Case Of An Unfunded Federal Mandate (1995).

V. The Cost-Benefit Provisions Of S. 1316 Should Apply To Disinfectants/Disinfection Byproducts Rulemaking

We urge members of this committee to remove the cost-benefit analysis exemptions for D/DBP rulemaking as found in section 1412(b)(6)(C) of S. 1316, and to make explicitly clear that the cost-benefit analysis provisions of the bill apply to the D/DBP rulemaking, including Stages I and II.



The Honorable John H. Chafee
United States Senate
407 Hart Senate Office Building
Washington, DC 20510

Dear Senator Chafee

Please find the enclosed testimony regarding S.1316, the Safe Drinking Water Act Amendments of 1995. I respectfully request it be included in the record for the October 19, 1995 hearing of the Environment and Public Works Committee

I appreciate the opportunity to share the National Association of Water Companies' views on S.1316 with the Committee

Sincerely,

Louis Jenny
Director of Congressional Relations

Enclosure
LJ:nms

James B. Groff
Executive Director

Suite 1212, 1725 K Street, N.W.
Washington, D.C. 20006

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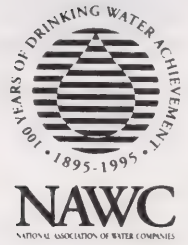

Statement of

The National Association of Water Companies

to the

Committee on Environment and Public Works

United States Senate

regarding

S. 1316

Safe Drinking Water Act Amendments of 1995

October 19, 1995

James B. Groff
Executive Director

Suite 1212, 1725 K Street, N.W.
Washington, D.C. 20006

(202) 833-8383
Fax (202) 331-7442

The National Association of Water Companies (NAWC) is the trade association representing the nation's investor-owned drinking water industry. Our more than 350 members in 41 states provide safe, reliable drinking water to more than 22 million Americans every day. The NAWC appreciates the opportunity to share with the Committee our views on S. 1316, The Safe Drinking Water Act Amendments of 1995, and our experience in effectively running water utilities.

The National Association of Water Companies commends the Environment and Public Works Committee for conducting hearings on S. 1316 the Safe Drinking Water Act Amendments of 1995 The introduction of this bill and the consideration of it by this Committee allows the debate on reauthorizing this important federal statute to move forward in earnest

We are pleased to endorse S. 1316. The NAWC believes this legislation will greatly increase public health, bring much needed efficiencies to the SDWA, and improve the current law. Moreover, this bill was born of months of discussions and negotiations by many interested parties, in which the NAWC was involved. The result of these months of hard work is a fair, balanced bill which all parties can support

S. 1316 represents an important effort to revise current law by focusing efforts on contaminants of the greatest health concern. This is done by mandating the use of occurrence data, improved scientific analysis, and best available technology. Furthermore, the elimination of the requirement for 25 new National Drinking Water Regulations every three years, along with the elimination of unnecessary monitoring requirements, and flexibility in selecting and regulating contaminants will allow the EPA and utilities to focus efforts and funds where they can do the most good for the public

Standard Setting Process

The current standard setting process impedes improvements to public health protection in that it channels limited resources to irrelevant or unconfirmed health issues. S. 1316 represents an opportunity to improve on this system. Currently, the standard setting process is based on technology, wherein a standard is set as stringently as technology will allow. The EPA is not allowed to take into consideration the cost or the benefits of such a standard

S. 1316, however, allows (though doesn't require) EPA to consider costs and benefits when setting standards in the future. This provision alone could save untold billions of dollars to customers who would otherwise be forced to pay for the implementation of regulations, even when the true health benefits are either unknown or negligible

The special standard setting language included in this bill for certain naturally occurring substances is also to be commended. The regulations for radon, arsenic and sulfate are correctly separated out in S. 1316 for differing procedures. We support the language in the bill with respect to these specific contaminants and believe it will result in sounder water quality regulations. Furthermore, the regulation of disinfection by-products requires a careful balancing between the risks of contaminants and the long-term risks of disinfectants. S. 1316 gives legislative support to the negotiated

rulemaking for disinfection by-products which EPA has undertaken

State Revolving Loan Fund

In this new era of Congressional opposition to unfunded federal mandates, it is encouraging to see an SRF piece included in this legislation. S. 1316 authorizes $1 billion for fiscal years 1995 through 2003

The Safe Drinking Water Act represents one of the largest unfunded mandates ever enacted. In 1993 before this very Committee the NAWC testified that, "before appropriating a penny for water suppliers, substantive changes must be made to the Safe Drinking Water Act. Unless such changes are made, no amount of funding can hope to meet the compliance needs of water suppliers." We still believe that, and we further believe that S. 1316 makes those necessary changes, and that an SRF will play a big role in helping water systems comply with the Safe Drinking Water Act

In this regard, we are particularly pleased S. 1316 extends eligibility of SRF loans to private and investor-owned water utilities (though we believe there are still needed some technical corrections in the language to avoid any confusion). NAWC members are federal tax paying businesses, which clearly supports their eligibility for SRF loans

Citizen Suits\Regulatory Compliance

One area where the NAWC would like to see some improvement in S. 1316 is the area of citizen suits. Current law allows citizens to take action against a utility even if that utility is operating under a federal or state administrative order or a judicial order. However, the ability of a citizen to bring a suit against a system is intended to give citizens recourse *if the appropriate government body is not taking action to enforce the SDWA*. The NAWC advocates language which would correct this error.

The NAWC is also advocating a "Regulatory Compliance" amendment to the SDWA. Under this amendment, a protection against unfounded and frivolous lawsuits would be provided to a public water system (publicly or privately owned) provided the utility is in compliance with maximum contaminant levels and treatment techniques as prescribed by the Safe Drinking Water Act and its regulations.

We believe that due to the growing occurrence of lawsuits this provision will go a long way to assure our customers that money spent by a water utility goes to providing safe reliable drinking water and not to defenses from frivolous law suits

Monitoring

Under S. 1316 states would be able to modify monitoring requirements from federal regulations that are not applicable to an area or region, provided they ensure compliance and enforcement of federal health standards. This is but one example of increased authority flowing to the states in this bill, and

should be applauded. The various states, as primacy agents, are best suited to make these decisions, and this could lead to a much more efficient drinking water system wherein the customers would win.

Conclusion

In closing, the NAWC applauds the Committee's work on this important legislation. Furthermore we stand ready to assist you in any way to achieve the goal of passage of a reauthorization of the Safe Drinking Water Act which addresses the many concerns delineated above

21-953 - 96 - 5

CHEMICAL MANUFACTURERS ASSOCIATION

November 2, 1994

Mr. Jimmie Powell
Committee on Environment and Public Works
United States Senate
Washington, DC 20510

Dear Mr. Powell:

Enclosed is a copy of CMA testimony on S.1316, the Safe Drinking Water Act Amendments of 1995. I would appreciate if this testimony could be included in the hearing record for the bill.

If you have any questions about these comments, or if you need additional information, please call me at 202/887-1126.

Thank you for your attention to this matter.

Sincerely,

Keith B. Belton
Associate Director,
Health and Safety Issues

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Responsible Care® A Public Commitment

Testimony of
the Chemical Manufacturers Association
on S.1316 the Safe Drinking Water Act Amendments of 1995
Before the
Senate Committee on Environment and Public Works

The Chemical Manufacturers Association (CMA) is pleased to submit this testimony on the Safe Drinking Water Act Amendments, S.1316, to the Senate Committee on Environment and Public Works. CMA generally commends the Committee for developing amendments to the Safe Drinking Water Act aimed at both improving the scientific basis of drinking water regulations and providing more cost effective protection of drinking water in the United States. CMA's principal interest in this legislation is in promoting sound and consistent approaches to risk assessment and characterization, to the use of cost-benefit analysis and to risk-based prioritization across agency programs. To that end, CMA directs its comments to sections 5, 6 and 28 of S.1316 which address those issues. CMA also endorses the testimony on S.1316 submitted to the Committee by the Chlorine Chemistry Council relating to the bill's provisions on disinfectants and disinfection by-products.

CMA is a nonprofit trade association whose member companies represent more than ninety percent of the capacity for basic industrial chemicals in the United States. The chemical industry now provides approximately 1.1 million jobs for American workers, an overall employment level that has been maintained over the past decade, even though the U.S. chemical industry has changed dramatically to enhance productivity and remain competitive in domestic and world markets. Today, the chemical industry is the leading U.S. exporter. Chemical exports in 1994 totaled over $51 billion, roughly one dollar of every ten dollars of U.S. goods exported that year, and produced a net trade surplus over $18 billion dollars.

The members of CMA are committed to conducting our businesses in a way that protects the environment, the public, the communities in which we operate and our workers. This commitment is demonstrated through our Responsible Care® programs. Our members are also committed to maintaining and enhancing the environmental

improvements that have been achieved over the last 20 years. As a country, we have made great strides in cleaning up and protecting our environment, but to date our approach has been piecemeal. As environmental issues arose in the past, statutes were enacted to address them. Those statutes were idiosyncratic -- each a product of its times. Each statute was prompted and shaped by the incidents that gave rise to it and the political atmosphere prevalent at the time. CMA believes it is time for Congress to begin creating a unified approach to the protection of human health and the environment based on certain core principles. Those principles should include risk-based prioritization, systematic consideration of cost and benefit in all regulations, scientifically sound risk assessments with risk characterizations that fully describe the uncertainties and complexities in the risk estimate and ample opportunity for public participation. The Safe Drinking Water Act Amendments should not create further divergence in the way these principles are applied to protect human health, safety and the environment. Rather, CMA urges the Senate to use this opportunity to move down the road to greater synthesis.

There is sufficient demonstrable agreement on core risk assessment, cost-benefit analysis and risk-based prioritization principles among members of Congress, among academicians and among stakeholders to make those principles the basis for any environmental, health or safety legislation notwithstanding some of the disagreements on the details evident during Congressional debates this year. Ideally, the Senate should adopt these core principles as part of a comprehensive risk and regulatory reform bill, such as S. 343, that is applicable to all regulatory activities protecting health, safety and the environment. In the absence of such legislation, however, Congress should adopt consistent provisions on those issues in any reauthorizations of existing statutes, and those provisions should be those upon which there is already considerable consensus.

Risk Assessment

S.1316 improves significantly the use of risk assessment in setting standards under the Safe Drinking Water Act and CMA lauds these improvements. However, CMA has concerns with the provisions in Section 5 of the bill prescribing how risk assessment results (risk characterizations) are to be reported to the public in documents

supporting regulations promulgated under the Act. CMA believes that in any characterization of risk presented to the public, it is important that a risk be described in a way that makes clear the uncertainty and variability as well as the policy judgments and conservatism embodied in the assessment. Without this full disclosure (often referred to as "transparency"), the public will likely misperceive the actual risks involved and will not be able to judge for itself the wisdom and necessity of the regulatory mandates that flow from the risk assessment.

The amendments to section 1412(b) of the Safe Drinking Water Act contained in section 5 of S.1316 go only part of the way toward ensuring this transparency. The Committee needs to make four improvements to that section:

1) S.1316 should require that, to the extent feasible, the Environmental Protection Agency present a range and distribution of the risk when presenting the risk information to the public so that uncertainties and variabilities in the assessment are patent.

2) S.1316 should require that the EPA identify the exposure scenarios it has used in a risk assessment and the likelihood of those exposures.

3) S.1316 should require that the EPA explain the influence of the default assumptions, inferences and models used in the risk estimates that it presents; and

4) S.1316 should require that to the extent feasible, default assumptions, inferences and models be used only where there is an absence of actual data.

These provisions have broad, bi-partisan support. To a great extent the National Academy of Sciences, the Carnegie Commission and even EPA, in its own risk characterization guidelines, have embraced these recommendations.[1] Moreover, nearly all members of the Senate already endorsed mandating that the agency follow these requirements. With one exception, both the Regulatory Reform Act of 1995, S. 343, and

[1] See National Research Council Committee on Risk Assessment of Hazardous Air Pollutants, Science and Judgment in Risk Assessment, National Academy Press (1994); Carnegie Commission, Risk and the Environment: Improving Regulatory Decision Making, (1993); and Memorandum from the Administrator of the Environmental Protection Agency to Assistant Administrators, Associate Administrators, Regional Administrators, General Counsel and Inspector General regarding EPA Risk Characterization Program, Mar. 21, 1995.

the Democratic substitute to that bill that was proposed by Senators Glenn and Levin during floor debate included such provisions. See section 633(d),(e) and (f) of S. 343 and section 634(c),(e) and (f) of Amendment 1487 to S. 343.[2]

Cost-Benefit

The Committee has appropriately recognized that evaluations of cost and benefit play an important role in determining the best course of regulatory action. The legislation requires the EPA to do a cost-benefit analysis, make the cost-benefit information available to the public and to seek public comments. More importantly, it gives the agency the discretion to abrogate a maximum contaminant level that the agency determines does not justify its costs, promulgating instead a standard that maximizes risk reduction in a way that justifies costs.

Unfortunately, the bill constrains agency discretion in conducting cost-benefit analyses unduly by being overly prescriptive regarding the type of benefits and costs that the agency may consider and by exempting some maximum contaminant level decisions from the cost-justification provision. See section

First, with respect to costs and benefits, S.1316 should simply direct the agency to consider all cost and benefits, whether quantifiable or not, including social, environmental, health and economic effects that are reasonable expected to result directly or indirectly from the proposed agency action. S.1316 should not require the agency to quantify or place monetary values on those effects particularly where such values would be speculative or subjectively determined.[3] In addition, since there is ample opportunity for obfuscation and manipulation of the cost-benefit analysis, S.1316 should require the agency to apply the same principle of transparency that it must for risk assessments. Namely, the costs and benefits should use comparable assumptions, which should be identified, and numerical estimates should specify ranges, margins of

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[2] The Glenn-Levin Amendment did not include the last of these requirements. Nevertheless, it did place some limitations on an agency's use of default assumptions, inferences and models, including requiring that the agency develop guidelines for using these defaults and for using available scientific information in place of defaults.

[3] We fear such speculative valuation may be contemplated in the amendments to section 1412(b)(3)(C)(iii) of the Safe Drinking Water Act, contained in section 5 of the bill, which directs the Administrator to identify valid measurements for benefits, including "consumer willingness to pay for reduction in health risks from drinking water."

error and uncertainties. These general principles for cost-benefit analysis have already been embraced by the Senate in both S.343 and the Democratic Glenn-Levin substitute amendment, and should be part of any revision to the Safe Drinking Water Act

Second, any exceptions to the cost-justification provisions are unnecessary. S.1316 has correctly recognized that there are circumstances where the maximum contaminant level dictated by the Safe Drinking Water Act would not make sense when the relative risk reduction benefit is compared to the cost. It has given the agency the authority to make adjustments in that situations. But it has left the decision whether to use that authority solely in the discretion of the agency. If the Committee believes that the principle of cost-justification is a good one and that the Agency is in the best position to make the judgment about its applicability, why should not that principle apply across all maximum contaminant level decisions? Why undermine the agency's flexibility with any exceptions? The Committee should eliminate the exceptions to the cost-justification test contained in the amendments to section 1412(b)(6)(B) and (C) of the Safe Drinking Water Act.

Risk-Based Prioritization

Systematic risk-based prioritization presents the best approach for enabling EPA to allocate its resources and those of the private sector effectively to address those risks that present the greatest threats to human health, safety and the environment. The recent recommendations made by the National Association of Public Administrators (NAPA) in its report "Setting Priorities: A New Direction for EPA." (NAPA Report) echo this sentiment

> ... another way EPA could lead a debate about priorities and goals would be to conduct a much more explicit priority setting exercise within the agency. Setting strategic priorities would focus the agency's limited resources on problems and activities where the resources could produce the biggest gains. The process would require the agency to assess the relative magnitude of the nation's environmental problems, the relative effectiveness of the management strategies at its disposal, and the interests and will of the public.[4]

[4] National Association of Public Adminstrators, "Setting Priorities, Getting Results: A New Direction for EPA," (1995) at 27.

The NAPA report also recommended that EPA "use comparative risk analysis to inform the selection of priorities and the developments of specific program strategies."[5] The NAPA report did not suggest the comparative risk analysis be a mere exercise for internal strategizing, however. It directed the agency to use the information gained to set priorities and allocate its budget:

> EPA should develop a stronger, better informed system to formulate its annual budget. Allocate resources based on comparative risk projects and strategic plans. The agency should integrate its agency-wide strategic planning process and goals-based budgeting process and use them for setting agency wide program priorities.[6]

The comparative risk analysis mandated by S.1316 in section 28 falls substantially short of requiring that the agency implement these recommendations. Section 28 is defective in a number of respects:

1) It requires the agencies to evaluate and rank only categories of facilities and activities. One result of a facility and activity-based focus is that the agency could not consider serious naturally occurring risks including biological (microbial) risks and radon or other such risks that do not necessarily stem from an activity or facility. More importantly, "facilities" and "activities" do not adequately correspond to the broad range or types of risks regulated by agency programs, so that the information about the relative risks posed by activities or facilities may not be of any real utility in prioritizing agency activities or resources. The Agency should be free to rank any source of risk (including categories of facilities and activities) it deems most appropriate to allow it to engage in effective prioritization.

2) It does not require that the agency actually use the risk ranking that it generates to budget or set regulatory, enforcement of research priorities as the NAPA Report recommends. It requires only a report to Congress. Its critical that the agency not go to all the effort and expense to produce the risk ranking required and have only a report to show for its efforts. While informing Congress about the relative worth of some of the Agency's programs and suggesting changes to those programs is useful, the Agency

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[5] Id. at 3.
[6] Id. at 163.

must be directed to start using the comparative risk information now to make more effective use of its resources.

3) Section 28 does not incorporate the necessary safeguards to ensure a credible comparative risk analysis. Specifically, it should require:

- more opportunities for public involvement;
- peer review of the methodology and scientific conclusions; and
- a transparent separation of the scientific conclusions from the value judgments which of necessity must be embodied in the risk comparisons.

The Senate has already approved, without objection, similar, but more comprehensive and effective, risk prioritization provisions in an amendment on the Senate floor to S. 343. As section 28 is currently written, it requires EPA to do even more detailed analysis than is required under the S.343 provisions, but that analysis would be no more than an exercise, resulting in no improvement in the effectiveness with which the agency uses its resources. The Committee should adopt the S.343 risk prioritization language which has broad bi-partisan support rather than what is now contained in section 28.

Conclusion

The reauthorization of the Safe Drinking Water Act presents an opportunity to begin creating a consistent approach to environmental regulation that has as its goal achieving the greatest levels of protection for the resources expended. We urge the Committee to consider and adopt the suggestions that we have made here ensuring sound risk assessments, effective use of cost-benefit analysis in decisionmaking and prioritization of Agency activities.

AMERICAN SOCIETY FOR MICROBIOLOGY

Public and Scientific Affairs Board
1325 MASSACHUSETTS AVE., N.W.
WASHINGTON, D.C. 20005-4171
TEL. (202) 737-3600
FAX: (202) 942-9335

November 28, 1995

The Honorable John H. Chafee
United States Senate
505 Dirksen Senate Office Building
Washington, D.C. 20510-3902

Dear Senator Chafee:

The American Society for Microbiology (ASM) is the oldest and largest single life science society in the world with more than 40,000 members. The membership of the ASM includes academic, government and industrial scientists involved in all areas of microbiology. The ASM would like to submit the following statement regarding S. 1316, the reauthorization of the Safe Drinking Water Act (SDWA), introduced in the U.S. Senate on 12 October 1995.

Reauthorization of the SDWA gives the public and Congress the opportunity to be assured that microbial contaminants are put in proper prospective for the future development of safe drinking water. The SDWA must recognize the dangers of microbial contaminants that cause waterborne infectious disease since many are emerging pathogens that scientists know very little about. There have been considerable research monies already invested in determining the long term health effects of chemicals. It is essential that in this reauthorization of the SDWA, greater attention is focused on the immediate acute health effects of microbial contaminants. At present the focus on the health effects of chemicals, which tend to be longer term, are emphasized.

One of the major failures of previous legislative reform efforts of the SDWA is the omission of microorganisms from the National Occurrence Database. As a result, development of detection and identification methods for microorganisms has been minimal, health effects are not determined and research monies are not forthcoming for microbial contaminants. It takes a national catastrophe similar to the waterborne infectious disease outbreak in April 1993 in Milwaukee, which resulted in 400,000 illnesses and more than 100 deaths to initiate an evaluation of a single microbial contaminant, *Cryptosporidium.* This is only one of the many disease-causing microorganisms found in drinking water. Without proper risk characterization, identification, occurrence information, and relative risk rankings with a process analogous to the level of effort made in assessing chemical contamination, then the resources will never be appropriated for addressing the very serious public health risks posed by microorganisms. The ASM is hopeful that this oversight of microorganisms will not be repeated in this reauthorization of the SDWA, and strongly encourages Congress to explicitly recognize microorganisms as contaminants in the legislative language.

The ASM is also concerned that S. 1316 does not address the safety of water distribution systems. The legislation addresses the safety of source water; however, it fails to give adequate attention to the importance of monitoring distribution systems for microbial contaminants such as *Legionella, Cryptosporidium* and *Mycobacterium*. Although source water may be relatively free of pathogens prior to entering a distribution system, it still has the potential to pose a serious

health risk to the end users due to microorganisms in the distribution system. These systems, if not properly monitored and tested, can provide environments where microorganisms may flourish. The ASM recommends regulating and monitoring distribution systems to avoid dangerous levels of microorganisms in the water supply for the end user.

Outlined below are specific comments on various sections of S. 1316:

In Section 3 entitled, State Revolving Loan Funds, under part (b) Health Effects Research, the legislation states that the Administrator shall give priority to research concerning the health effects of *Cryptosporidium*, disinfection byproducts and arsenic. *Cryptosporidium* is not the only microorganism that can pose a serious health threat in drinking water. It is the opinion of the ASM that there are several other microorganisms, such as adenoviruses, *Legionella*, Norwalk viruses and the coxsackieviruses that should be included in the research priority list. The health effects of *Cryptosporidium* are understood to a greater extent than other microorganisms that can pose similar health threats.

In the same section under part ***(c) Monitoring for Unregulated Contaminants***, the ASM believes it is extremely important that microbial contaminants are included in this section. New and emerging microorganisms are continually being detected in the water supply, such as *Cyclospora* that caused a major outbreak in West Palm Beach between April through September 1995. The ASM strongly encourages clarification of the term unregulated contaminants to include microorganisms.

In Section 12 entitled, Technology and Treatment Techniques; Technology Centers, point-of-entry devices (POE) are suggested as a treatment approach for both small systems and water entering a home. However, POE devices similar to point-of-use (POU) devices are not required to comply with any federal regulations or standards. Under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA), EPA maintains a system for registering POU devices; however, if the devices are not called microbial purifiers, then they do not have to meet the requirements for testing to demonstrate the adequate removal of microorganisms. This registration system does not attempt to regulate the industry or their product claims. Often, consumer scare tactics, fraud, and false advertising are being used to sell these devices. Both the POE and POU industry need to be federally monitored so that consumer health is protected.

In Section 16 entitled, Operator and Laboratory Certification, the EPA is required to assist States in certifying laboratories engaged in testing for the purpose of complying with various parts of S. 1316. Presently, EPA does not have an adequate system for certifying laboratories for microorganisms other than coliform bacteria. The ASM is concerned about the EPA's ability to carry out this mandate and protect human health in light of EPA's absence of an adequate test system for microorganisms.

In addition, training programs should be established so that new microbial methods can be implemented and used. Training programs are needed because many water laboratories and private laboratories are independently setting up parasite and virus monitoring programs. If an authorized training program is established, then new methods can be standardized and used with

more confidence. Monitoring information is the key to understanding the occurrence and the exposure of microorganisms and ultimately, the risk.

In Section 19 entitled, Monitoring and Information Gathering, under part (3) National Drinking Water Occurrence Database, the ASM believes that microorganisms are inadequately represented. The Information Collection Rule (ICR) is the first attempt to implement a national monitoring program for any microorganism other than coliform bacteria. Many more microorganisms, such as *Legionella* in distribution systems pose a significant threat to public health and must be addressed in future national surveys. The ASM would be pleased to assist the EPA in developing an appropriate list of microorganisms for inclusion.

The ASM appreciates the opportunity to submit this statement for the record. We look forward to working with Congress as the reauthorization of the Safe Drinking Water Act is considered. Should you have any questions regarding this statement, please contact Linda Murphy at the ASM headquarters at (202) 942-9302.

Sincerely,

Gail Cassell, Ph.D.
Chair, Public and Scientific Affairs Board (PSAB)

Ronald Atlas, Ph.D.
Chair, PSAB Committee on Environmental Microbiology

Joan Rose, Ph.D.
Chair, PSAB Subcommittee on Safe Drinking Water

United States General Accounting Office

GAO

Testimony

Before the Committee on Environment and Public Works, U.S. Senate

Hearing Held on
Oct. 19, 1995
Statement Submitted on
Nov. 1, 1995

DRINKING WATER

Safe Drinking Water Act Reauthorization Issues

Statement for the record by
Peter F. Guerrero, Director,
Environmental Protection Issues,
Resources, Community, and Economic
Development Division

GAO/T-RCED-96-35

these approaches can be effective in reducing compliance and oversight costs, our work has identified a number of implementation problems at some states and barriers affecting states' ability to take full advantage of these approaches. For example, quality assurance and pollution prevention activities, such as comprehensive inspections of water systems, operator certification and training, and wellhead protection, could keep problems from occurring and thus have the potential to reduce compliance and oversight costs; however, we found that states' implementation of these activities is sometimes ineffective and that competing demands for limited resources have forced many states to restrict their efforts.

- Because funding has not kept pace with the program's expanding requirements, in 1992 the Environmental Protection Agency (EPA) attempted to help states deal with their resource problems by (1) setting priorities within the program and (2) giving the states 5 years to build sufficient capability to meet all requirements. The effect of this strategy, however, was to force states to pursue national priorities--generally overseeing the implementation of new regulations on contaminants--while curtailing traditional quality assurance activities. In addition, EPA also faced the possibility of withdrawing responsibility for the program from at least eight states because of shortfalls in their program implementation. Recognizing that states' resource shortages will not be eliminated within the 5-year period as envisioned in the 1992 strategy, EPA is revising its guidance on priorities and has initiated an effort to reevaluate and streamline drinking water regulations. While these steps will not be sufficient to eliminate the resource shortages, they will make more effective use of the funds that are available.

- The proposed use of state revolving funds capitalized with federal appropriations for financing public water systems is an approach similar to the State Water Pollution Control Revolving Fund (SRF) program under the Clean Water Act, which we found to be a step toward more efficient government investment in wastewater treatment facilities. Our review of EPA's experience with this program also provides some insights into potential problems with implementing SRFs for financing improvements to public water systems under the Safe Drinking Water Act. We found that the SRF program will not generate enough funds to close the tremendous gap between wastewater treatment plant needs and the available resources. We also found that restrictions on the purchase of land and the allowable length of loan terms have made it difficult for some communities, particularly small communities, to take advantage of assistance under the SRF program. Additionally, small communities have received a disproportionately small share of SRF moneys because of difficulties in (1) competing with larger communities for loans and (2) repaying loans at any interest rate.

BACKGROUND

The Congress enacted the Safe Drinking Water Act in 1974 to protect the public from the risks of contaminated drinking water. Under the act, EPA is required to establish (1) drinking water standards or treatment techniques for contaminants that could adversely affect human health and (2) requirements for monitoring the quality of drinking water supplies and for ensuring the proper operation and maintenance of public water systems. The act also authorizes EPA to grant primary enforcement authority for the drinking water program, commonly referred to as "primacy," to states that meet certain requirements. All states except Wyoming

Mr. Chairman and Members of the Committee:

We appreciate the opportunity to discuss issues related to S. 1316, the bill being considered by the Committee to reauthorize the Safe Drinking Water Act. Over the past several years, rapidly escalating costs and increasingly serious implementation problems have affected the drinking water program, particularly as it impacts individual water systems and the states charged with overseeing them. The proposed reauthorization bill contains various provisions that deal with these important issues. During the 1990s, GAO has reported on many of these issues at the request of the Congress.[1]

Our statement today highlights some of the key findings in our completed work relating to (1) various managerial, technical, and preventive approaches to dealing with water systems' compliance problems; (2) state resources needed to oversee the implementation of the drinking water program; and (3) financing infrastructure needs. We have included comments on relevant sections of the proposed reauthorization bill as appropriate.

In summary, Mr. Chairman, we have reported the following:

- States employ a variety of strategies to help water systems comply with drinking water requirements, including providing programs to certify and train water system operators; performing comprehensive inspections, called sanitary surveys, of systems' design, operation, and maintenance; protecting water sources to prevent contamination; approving alternative technologies suitable for small water systems; and determining the viability of systems and their need for restructuring. While each of

[1]For a complete list of GAO's reports on drinking water, see app. I.

have assumed primacy for their drinking water programs and receive grants from EPA to help pay for the oversight of water systems and for other program responsibilities. The states received grants of $70 million during fiscal year 1995.

From 1974 to 1986, EPA regulated 23 contaminants in drinking water. In 1986, the Congress enacted sweeping amendments that, among other things, significantly increased the number of contaminants to be regulated. Specifically, EPA was required to set drinking water standards for 83 contaminants within 3 years and, after publishing a list of other candidates for regulation, set standards for at least 25 contaminants on the list every 3 years, beginning in 1991. As of October 1995, EPA had adopted standards for 84 contaminants.[2] Many water systems already bearing significant costs just to implement existing regulations will be hard pressed to implement additional requirements, according to EPA, state, and industry officials. According to EPA's estimates, water systems' annual compliance costs--the costs of monitoring water quality, installing treatment facilities or processes to meet EPA's standards, operation and maintenance, and reporting--will reach $1.4 billion in 1995.

While increases in the number of regulated contaminants and the costs of meeting drinking water requirements affect all water systems, small water systems have felt the greatest impact. Systems serving 3,300 people or fewer account for 87 percent of all community water systems and often lack the financial and technical resources to meet the requirements. Small systems have particular difficulty because of their small customer base and, in some instances, water rates that do not recover the full costs of operations. These conditions affect small systems' ability to

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[2]As a result of a court order, standards for three contaminants (aldicarb, aldicarb sulfone, and aldicarb sulfoxide) have not taken effect.

provide adequate treatment facilities, pay for qualified operators, maintain the system infrastructure, adhere to required water quality testing and reporting requirements, and take timely corrective action when found in violation.

STATES CAN USE SEVERAL APPROACHES TO HELP WATER SYSTEMS COMPLY WITH DRINKING WATER PROGRAM'S REQUIREMENTS

States employ a variety of approaches to help water systems comply with drinking water requirements, including providing programs to certify and train water system operators; performing comprehensive inspections, called sanitary surveys, of systems' design, operation, and maintenance; protecting water sources to prevent contamination; and approving alternative technologies suitable for small water systems. The most comprehensive approach used by some states to enhance compliance involves assessing the "viability" of water systems--the financial, technical, and managerial capacity of systems to comply with current and future requirements--and developing a strategy for restructuring nonviable systems through management and/or ownership changes (e.g., consolidation with larger water systems) so that these systems have the resources to meet the program's requirements.

In a series of reports issued over the past several years, we have examined each of the approaches cited above and found that they can be effective in reducing both compliance and oversight costs. However, we also identified a number of implementation problems at some states and barriers that affected the states' ability to take full advantage of these approaches. In addition, limited resources have forced many states to reduce quality assurance activities in favor of other priorities.

Operator Certification and Training

Operator certification and training programs are intended to ensure that water systems are operated and maintained by qualified individuals and that the systems comply with federal and state drinking water regulations. EPA officials believe that states should be required to implement operator certification programs for all water systems. However, there is no national operator certification program or federal requirement for states to have such programs themselves.

System operators' lack of knowledge about drinking water requirements and proper system operations is a key reason for compliance problems among small water systems. Moreover, as we concluded in 1990,[3] some violations are probably going undetected because of sampling errors by water system operators. EPA and state program managers told us that they were concerned about the sampling techniques used by small system operators and the accuracy of test results. For the most part, these managers attributed potential problems to the inadequate training of operators and the lack of full-time operators or the high turnover of operators at small water systems. In addition, in a 1992 report[4] on compliance with requirements for notifying the public when violations of drinking water requirements occur, we noted that operators of small systems are more likely to be uninformed about many drinking water requirements, the time frames for implementing new requirements, and subsequent public notification requirements.

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[3]Drinking Water: Compliance Problems Undermine EPA Program as New Challenges Emerge (GAO/RCED-90-127, June 8, 1990).

[4]Drinking Water: Consumers Often Not Well-informed of Potentially Serious Violations (GAO/RCED-92-135, June 25, 1992).

While nearly all states do have some type of operator certification requirements, our 1991 testimony[5] noted that there is considerable variation in the scope and content of these programs. For example, states frequently limit the application of certification requirements on the basis of the water systems' size, the treatments used, or the source of the supply. An April 1991 study by EPA found that at least 15 states exempted some systems serving populations of 500 or fewer from having certified operators.[6] Such exemptions are significant because over 60 percent of the nation's community water systems serve 500 people or fewer. We found that some states exempt small water systems from operator certification requirements because (1) the requirements are considered unnecessarily burdensome and (2) the smallest systems are often operated by part-time employees or volunteers and cannot attract or pay for an operator who meets all of the qualifications.

The proposed reauthorization bill addresses these concerns by providing incentives for water systems to have certified operators and for states to strengthen their certification programs. One provision would require water systems to have certified operators as a condition of receiving assistance from the proposed SRF for these systems. In addition, if a water system that has received such assistance does not comply with the requirement to have a certified operator, the bill would authorize EPA to either withhold SRF moneys from the applicable state or require repayment of an

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[5]Observations on Compliance and Enforcement in EPA's Drinking Water Program (GAO/T-RCED-91-47, May 10, 1991).

[6]According to an official in EPA's Office of Groundwater and Drinking Water, the agency has not conducted any more recent studies. In addition, an official of the Association of Boards of Certification, an organization that assists states with environmental certification programs, believes that state certification requirements have not changed significantly over the past few years.

amount equal to the amount of the assistance provided to the water system. While EPA would provide guidance to assist states in implementing operator certification requirements, for states that have obtained primacy, the authority to prescribe the appropriate level of training for certification rests solely with them.

Sanitary Surveys

Sanitary surveys[7] can be one of the most effective tools that states can use to help ensure compliance with drinking water regulations and to identify and correct problems before they become serious, according to our 1993 report.[8] EPA recommends that surveys be performed at least every 3 years and that they cover all components of water systems--including the systems' sources of water, facilities and equipment, and operations and maintenance--to determine the systems' adequacy for producing and distributing safe drinking water. In our 1993 report, which summarized the results of a nationwide questionnaire and our review of 200 sanitary surveys conducted in four states, we found the following:

- Sanitary surveys were often deficient in how they were conducted, documented, and/or interpreted. Specifically, 45 states omitted one or more of the key components or operations, such as inspections of the water distribution system or reviews of water system operators' qualifications. Additionally, some states did not require documentation of the items inspected or of the survey results.

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[7]EPA defines a sanitary survey as an on-site review, evaluation, and/or inspection of the water source(s), facilities, equipment, operations, and maintenance of a public water system for the purpose of determining its adequacy for producing and distributing safe drinking water.

[8]Drinking Water: Key Quality Assurance Program Is Flawed and Underfunded (GAO/RCED-93-97, Apr. 9, 1993).

- In the four states we visited, there were recurring problems with water systems' equipment and management, particularly among small systems. States' questionnaire responses confirmed that problems associated with system infrastructure are largely found among smaller systems. Our detailed review of the four states' sanitary surveys also showed that regardless of a system's size, the deficiencies previously detected frequently went uncorrected.

While drinking water officials at all levels agree on the importance of sanitary surveys, 23 of the 50 states reported that the frequency with which they conduct sanitary surveys had declined over the past few years. Among the reasons the states cited were the need to perform higher-priority work required by the Safe Drinking Water Act, primarily overseeing the implementation of new regulations on contaminants; staff shortages; and financial constraints.

While the proposed reauthorization bill does not directly address the issue of sanitary surveys, it does address the underlying resource constraints that affect their use. The bill would provide for a substantial increase in the funding for states' administration of drinking water programs, from $70 million in fiscal year 1995 to $100 million annually through 2003, and states may use some of these funds for sanitary surveys.

Wellhead Protection

In 1993, we reported that the most cost-effective approach to protecting groundwater sources used for drinking water is to prevent their contamination.[9] Cleaning up contaminated drinking

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[9]Drinking Water: Stronger Efforts Needed to Protect Areas Around Public Wells From Contamination (GAO/RCED-93-96, Apr. 14, 1993).

water can cost millions of dollars and take many years, and obtaining alternative water supplies can also be very costly. The 1986 amendments to the Safe Drinking Water Act called for each state to develop a wellhead protection program by 1989 to protect surface and subsurface areas surrounding public drinking water wells from contamination.[10] Among other things, each program was required to specify the roles and duties of state and local governments and public water systems, define wellhead protection areas, identify potential sources of contamination within each area, and describe managerial approaches to be used to protect water supplies. However, states have been slow to develop and implement these programs.

At the time we reported on the wellhead protection program in 1993, only 26 states had approved programs; as of October 1995, 38 states had approved programs. EPA and state officials identified a severe shortage of funds as the primary reason for the slow progress as well as (1) opposition at the local level against states' enactment of land-use controls[11] and (2) a general lack of public awareness about the vulnerability of drinking water to contamination and about the need to protect wellhead areas.

The proposed reauthorization bill would establish a "source water protection partnership" program, covering both groundwater and surface water systems, in which states would be required to delineate protection areas for community water systems' water

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[10]The wellhead protection program is directed at water systems that use groundwater as a source of drinking water. About 80 percent of the 57,000 community water systems obtain their supply from groundwater sources. The remaining water systems use surface water sources, such as lakes and rivers, for their drinking water supply.

[11]Land-use controls generally place restrictions on the types of facilities or activities that may be located within a designated wellhead protection area. In addition, facilities already operating within designated areas are subject to stringent monitoring and reporting requirements.

sources within 5 years from the date of enactment and, to the extent practicable, conduct assessments to determine the vulnerability of the water sources to contamination. The bill also authorizes states to establish a petition process whereby individual water systems may request technical assistance from their states in developing a partnership among the owners and operators of the systems, governments, and other persons in protection areas. Among other things, the partnership would develop recommendations for voluntary and incentive-based strategies for the long-term protection of their water sources. Additionally, the bill would allow states to use a portion of the proposed SRF moneys to administer water protection programs, provide to small communities technical assistance on protecting water sources, and finance the acquisition of land or a conservation easement for the purpose of protecting the sources from contamination. Making financial assistance available to support state programs and local water protection projects is consistent with our finding that the primary reason for the slow progress in the existing wellhead protection program is a shortage of resources.

Approval of Alternative Technologies

A number of lower-cost alternative technologies are available to small water systems that are unable to afford the full-scale treatment facilities used by larger systems. For example, some drinking water contaminants can be removed using pre-engineered "packaged treatment" plants that are assembled in a factory, mounted on skids, and transported to treatment sites virtually ready to use. Some small systems have successfully used these alternatives to meet their treatment needs at an affordable cost. In a 1994 report,[12] we cited one case in which a small water system

[12]Drinking Water: Stronger Efforts Essential for Small Communities to Comply With Standards (GAO/RCED-94-40, Mar. 9, 1994).

in Connecticut saved $1 million by installing two packaged treatment plants instead of building a larger, full-scale treatment plant to serve its 3,000 customers. Our report concluded, however, that relatively few small systems have been able to take advantage of alternative technologies because several barriers impede their widespread use:

- A lack of reliable information on the cost and performance of alternative technologies makes it difficult for officials of small systems and state regulators to evaluate whether the technologies are affordable and will meet regulatory requirements. State officials told us that while some data are available from equipment manufacturers, the information is not always adequate for assessing performance under site-specific conditions.

- Some alternative technologies are too complex for operators of small systems to properly operate and maintain.

- EPA has been involved in a number of efforts to collect needed cost and performance data and make alternative technologies more accessible to small water systems. However, because of the agency's limited resources and other factors, we found that these efforts have met with limited success.

The proposed reauthorization bill contains several provisions that deal with the problems we identified regarding the use of alternative technologies at small water systems. For example, at the time EPA promulgates drinking water regulations, the agency would also be required to identify treatment technologies that are feasible when the costs for small water systems are taken into consideration. The bill also authorizes EPA to collect information on the performance of commercially available technologies for small

systems and to establish at least five centers to provide research, training, and technical assistance for small water systems. These provisions address our findings on the need for reliable information on the performance of alternative technologies appropriate for small systems.

Viability and Restructuring Programs

While the use of alternative technologies and the quality assurance and pollution prevention programs described earlier offer some hope for helping small community water systems, they fall short of a comprehensive solution, largely because sufficient resources are not available to help the thousands of systems in need of support. Our March 1994 report noted that EPA and the states are increasingly recognizing that the heart of the noncompliance problem lies with the sheer volume of small water systems that lack the capacity to remain in compliance with drinking water regulations over the long term. Accordingly, several states have turned toward viability programs and restructuring strategies to provide a more comprehensive solution. Viability programs, in general, are designed to (1) assess water systems' ability to consistently meet current and prospective regulatory requirements and (2) determine the best solution for bringing nonviable systems into compliance. Restructuring is the adoption of management and/or ownership changes--through mergers or consolidations, for example--that help systems address program responsibilities and increased costs.

We found that viability and restructuring programs have the potential to improve compliance with drinking water requirements and help relieve the significant resource constraints experienced by the states' drinking water programs. According to EPA, approximately 50 percent of the nation's small water systems are

located within the Census Bureau's metropolitan statistical areas[13] and are potential candidates for physical consolidation or shared management arrangements. While consolidation of nonviable systems is not always feasible, many EPA, state, and industry officials we interviewed believe it may be the best option for bringing these systems into compliance while at the same time reducing the states' oversight workload.

Although restructuring and viability programs seem promising, our 1994 review showed that few states have been successful in these efforts thus far. Unfortunately, while such programs offer states a way to reduce their own long-term costs by reducing the number of problem systems they must oversee, the states lack the resources needed in the near term to develop and implement these programs. In addition, we found that states have difficulty obtaining from state legislatures the authority needed to implement such programs. We also found that the formula EPA uses to allocate drinking water program grants may serve as a disincentive to consolidation because, in general, the formula is weighted so that the states with more water systems receive more funding.

The proposed reauthorization bill would address many of the issues we raised by requiring states to develop and implement a strategy to assist water systems in acquiring and maintaining the financial, technical, and managerial capacity to meet drinking water requirements. States would be allowed to use a portion of the moneys received for the proposed SRF for this purpose and for providing technical assistance on the restructuring or consolidation of small water systems. The bill would also allow SRF moneys to be used for projects that will facilitate the

[13]A metropolitan statistical area contains a core area with a large population nucleus--currently defined as a city or urbanized area with at least 50,000 inhabitants--together with adjacent communities having a high degree of economic and social integration with that core.

consolidation of water systems and would prohibit assistance to water systems that lack the financial, technical, and managerial capacity to ensure compliance or that have a history of violations. Another provision of the bill would require EPA to withhold a percentage of a state's SRF allocation, beginning in fiscal year 1999, if the state fails to obtain authority to ensure that new water systems demonstrate the capacity to comply with all drinking water regulations in effect, or likely to be in effect, when the systems commence operation. Finally, the proposed bill (1) authorizes funding for a network of university-based environmental finance centers to provide training and technical assistance to state and local officials in developing the capacity of water systems and (2) establishes a national clearinghouse to collect and disseminate information on capacity development.

STATES LACK SUFFICIENT RESOURCES
TO OVERSEE PROGRAM IMPLEMENTATION

States' drinking water programs are responsible for a variety of activities, including oversight of water systems' compliance with drinking water requirements, enforcement, technical assistance, sanitary surveys, etc. However, even before the new requirements of the 1986 amendments to the Safe Drinking Water Act began to take effect, states were unable to implement basic elements of their drinking water programs. Since that time, the situation has deteriorated. As we reported in 1993,[14] the states have received relatively modest increases in their federal drinking water program grants despite vastly increased oversight responsibilities. Using a resource-needs model developed by EPA and the Association of State Drinking Water Administrators, EPA estimated, on the basis of combined federal and state spending of $142 million and program needs of $304 million, that the gap

[14]Drinking Water Program: States Face Increased Difficulties in Meeting Basic Requirements (GAO/RCED-93-144, June 25, 1993).

between states' program needs and the available resources was approximately $162 million in 1993.[15]

To assist states with their funding difficulties, EPA issued a strategy in June 1992 to set "short-term" priorities in the drinking water program. This strategy would allow both EPA and the states to focus limited resources on what the agency considered to be the highest priorities first, while giving the states time to "build resources" in order to fully implement the program after a period of up to 5 years. In a 1992 report,[16] we concluded that while it was understandable that EPA would attempt to establish priorities among the program's requirements, the strategy shifted resources away from quality assurance activities, such as sanitary surveys, that promote compliance by water systems and that have traditionally formed the backbone of states' programs. We also concluded that it was unrealistic to assume that states could build sufficient resources to fully implement the drinking water program's requirements by the end of the 5-year period.

Shortly after the 1992 guidance on priorities was issued, it became clear that a number of states were having difficulty even maintaining base-level programs, let alone building capacity to fully implement all of the program's requirements. At least eight states faced the withdrawal of primacy because of their failure to adopt new regulations on contaminants or maintain adequate staffing levels. Our 1993 report noted that concerns about the states' ability to maintain adequate programs, given their financial constraints, led EPA to identify the primacy issue as a "material

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[15]Technical and Economic Capacity of States and Public Water Systems to Implement Drinking Water Regulations: Report to the Congress, EPA, Office of Water (810-R-93-001, Sept. 1993).

[16]Drinking Water: Widening Gap Between Needs and Available Resources Threatens Vital EPA Program (GAO/RCED-92-184, July 6, 1992).

weakness" under the Federal Managers' Financial Integrity Act. The target date for completing corrective action on this material weakness is 1997.

Recognizing that the states' resource shortfalls will not be eliminated during the 5-year time frame as envisioned in its earlier strategy, EPA is revising its 1992 guidance on priorities for state programs. Among other things, the new draft guidance incorporates minimum requirements for states' technical assistance and sanitary survey programs, including a requirement for following up on identified deficiencies. Additionally, the draft guidance allows states some flexibility in adjusting national priorities to reflect state-specific public health priorities. EPA has also initiated an effort to reevaluate and streamline its regulations to help bring program costs more in line with resources. These initiatives will help make more effective use of the funds that the states are devoting to environmental protection. However, under the existing statute, new responsibilities--in the form of additional regulated contaminants--will continue to be added to the program and will be addressed at the expense of other important activities, often to the detriment of the overall program. As we noted in March 1994 testimony,[17] modification of the 1986 amendments could allow limited resources to be reallocated to activities that are more important to state and local efforts to protect drinking water. For example, we observed that the requirement to regulate 25 additional contaminants every 3 years, with little regard for the relative risks they pose, might well be a good candidate for such reconsideration.

The proposed reauthorization bill addresses the resource issue we have identified in several ways. As noted earlier, the bill increases funding for states' drinking water programs from $70

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[17]Drinking Water: Combination of Strategies Needed to Bring Program Costs in Line With Resources (GAO/T-RCED-94-152, Mar. 14, 1994).

million in fiscal year 1995 to $100 million annually through 2003. In addition, under the proposed SRF, states could use a portion of the moneys allocated to the fund to administer the loan program, administer a program to protect water sources, develop a "capacity development" strategy for assessing the viability of water systems, and provide technical assistance to small water systems for protecting water sources or developing capacity. The bill would also eliminate the requirement that EPA set standards for 25 additional contaminants every 3 years and, instead, require EPA to take action (i.e., make a determination that regulation is or is not warranted or that further study is needed) on at least 5 contaminants every 5 years, beginning in 2001.

USE OF REVOLVING LOAN FUNDS CAN HELP MEET LOCAL ENVIRONMENTAL INFRASTRUCTURE NEEDS

In the 1987 amendments to the Clean Water Act, the Congress reduced the federal role in financing local wastewater treatment facilities by creating the SRF program and phasing out the Construction Grants Program.[18] Under the SRF program, EPA provides grants to capitalize the states' funds, while the states identify investment priorities and manage the loan program. As loans are repaid, the fund is replenished, and loans can be made for other eligible water pollution control projects.

In a 1992 report,[19] we concluded that SRFs are an efficient alternative to the Construction Grants Program for providing a subsidy to local governments. We reported that SRFs increase the flexibility of states to meet priority needs and encourage local

[18]Under the Construction Grants Program, EPA gave funds directly to local governments for the construction of wastewater treatment facilities.

[19]Water Pollution: State Revolving Funds Insufficient to Meet Wastewater Treatment Needs (GAO/RCED-92-35, Jan. 27, 1992).

governments to reduce costs and improve operations and maintenance. As local governments assume more responsibility for the cost of facilities, they are likely to seek less costly alternatives to meeting their needs.

We also concluded that several changes could improve the ability of states to meet local needs through SRFs. For example, under the Clean Water Act, SRF loans cannot be made to purchase land unless the land itself is directly used in the wastewater treatment process (e.g., wetlands used to filter wastewater as part of the treatment process). Moreover, the land upon which a treatment plant would be built and easements and rights-of-way for wastewater collection systems are not eligible for purchase with SRF moneys. We found that the ineligibility of certain land costs for SRF assistance poses a financial problem for many communities, particularly small communities where land costs can represent 20 percent of project costs. To obtain funds for the purchase of needed land, these communities must often borrow in the private financial market at higher interest rates.

Similarly, the Clean Water Act prohibits states from offering loan terms beyond 20 years. We reported that although the design life of most plants and equipment is 20 years, some treatment facilities, such as filtration systems and lagoons, have a design life exceeding 20 years. Small communities, which often need such a facility, are particularly affected by the restriction on a loan term because a disparity between the loan term and the design life of the project may increase user charges unnecessarily.

While the SRF program is expected to meet only 31 percent of the nation's estimated wastewater treatment needs by the year 2001, it will be particularly difficult for SRFs to meet the needs of small communities because such communities cannot take advantage of economies of scale, and thus per capita costs for wastewater

treatment are relatively high. When these costs are combined with low per capita income, the debt may be unsupportable at any interest rate. As a result, almost three-quarters of the states responding to GAO's survey maintained that SRFs will not meet wastewater treatment needs in small communities. These communities are at a disadvantage when they must compete with larger communities for SRF assistance because they may not have credit ratings and may represent higher credit risks as a result of their small revenue bases.

Although the SRF that would be established by the proposed reauthorization bill is unlikely to meet all identified needs for infrastructure improvements, it would provide substantial relief to many water systems that cannot afford the capital investments required to provide safe drinking water. The bill would authorize funding of $600 million for fiscal year 1994 and $1 billion per year for fiscal years 1995 through 2003 to capitalize the state SRFs. The bill also contains provisions that would address some of the problems we identified in the Clean Water Act's SRF program. For example, the bill allows (1) the use of SRF assistance to acquire land for the construction of a treatment facility and (2) for disadvantaged communities, a 30-year loan term as long as it would not exceed the design life of the project. In addition, as noted earlier, the bill contains provisions that could reduce the number of water systems that need assistance, including funding of restructuring and consolidation projects, funding of projects to protect water sources, and incentives for states to prevent the formation of water systems that do not have the financial, technical, managerial capacity to meet drinking water requirements. Finally, the bill would allow states to use up to 30 percent of their SRF allocations to subsidize disadvantaged communities that cannot afford to repay loans. These provisions address key concerns we have raised about the resources that are needed by water systems to improve the quality of drinking water.

REPORTS ON SAFE DRINKING WATER ISSUES

Drinking Water: Combination of Strategies Needed to Bring Program Costs in Line With Resources (GAO/T-RCED-94-152, Mar. 14, 1994).

Drinking Water: Stronger Efforts Essential for Small Communities to Comply With Standards (GAO/RCED-94-40, Mar. 9, 1994).

Drinking Water Program: States Face Increased Difficulties in Meeting Basic Requirements (GAO/RCED-93-144, June 25, 1993).

Drinking Water: Stronger Efforts Needed to Protect Areas Around Public Wells From Contamination (GAO/RCED-93-96, Apr. 14, 1993).

Drinking Water: Key Quality Assurance Program Is Flawed and Underfunded (GAO/RCED-93-97, Apr. 9, 1993).

Drinking Water: Widening Gap Between Needs and Available Resources Threatens Vital EPA Program (GAO/RCED-92-184, July 6, 1992).

Drinking Water: Consumers Often Not Well-Informed of Potentially Serious Violations (GAO/RCED-92-135, June 25, 1992).

Observations on Compliance and Enforcement in EPA's Drinking Water Program (GAO/T-RCED-91-47, May 10, 1991).

Drinking Water: Compliance Problems Undermine EPA Program as New Challenges Emerge (GAO/RCED-90-127, June 8, 1990).

December 1994

EPA/NRWA
Ground Water
Wellhead Protection Program

"Where the Rubber Meets the Road"

Protecting the Drinking Water of 2,292,930 Residents of 1,197 Rural Communities.

A Report by the
National Rural Water Association

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A Report by the
National Rural Water Association

P.O. Box 1423 · 2915 S. 13th · Duncan · OK 73534

More ground water protection ordinances have been adopted under this program than have been adopted under all other EPA sponsored programs combined.

The NRWA Ground Water Wellhead Protection Program:

The program operates in twenty four states with a full time Ground Water Technician serving each state. Each state rural water association Ground Water Technician provides technical assistance and information to a community's planning team throughout the development of their plan. The program consists of the following steps for each community:

Step One: **Selecting the Planning Team**

Select a representative group of community members for your planning team. The size and makeup of the team will depend on your local needs and style.

Step Two: **Delineating the Protection Area**

The next step for the planning team is to identify the area needing protection. Your community's ground water passes through areas surrounding your well site that could affect the quality of your water. Gather information and map the wellhead protection.

Step Three: **Identifying Potential Contamination Sources**

Identify and locate potential threats to your water supply. Pollutants released within the area you define have the potential of reaching your well and contaminating the water supply. Develop and list an inventory of potential contamination sources.

Step Four: **Managing the Wellhead Protection Area**

Develop a plan to manage the protection area. Land use planning, by law, is primarily a matter of local discretion. Regulatory controls can be as simple as issuing permits for activity in the protection area, or as intricate as zoning ordinances.

Step Five: **Developing a Contingency Plan**

Develop a contingency plan with procedures for responding to a crisis and ideas for alternative water supplies. Review the program annually.

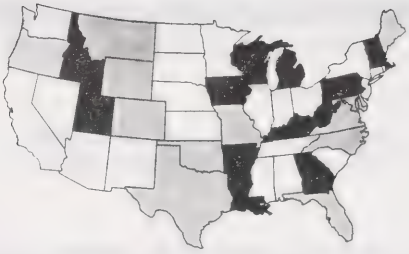
Each community passes a local ground water, wellhead protection ordinance or other land use management measure as part of their step 4.

March 15, 1991 — October 31, 1994

Protecting the Drinking Water of

2,292,930

People



Original 12 Ground Water Programs established in 1991

Ground Water Expansion Programs established in 1994

Systems Actively Protecting Their Groundwater

as of October 31, 1994

State	Step 1	Step 2	Step 3	Step 4	Step 5
Arkansas	4	15	17	46	2
Colorado	8	1	0	0	0
Florida	4	2	1	0	0
Georgia	42	16	8	18	37
Iowa	14	1	3	33	3
Idaho	7	5	4	40	1
Kentucky	13	6	10	41	1
Louisiana	1	0	0	12	37
Massachusetts	1	0	5	41	7
Maryland	0	1	2	0	0
Maine	13	5	5	1	0
Michigan	1	5	10	42	1
Missouri	4	6	2	0	0
Montana	11	0	3	0	0
North Carolina	23	0	0	0	0
New Hampshire	1	2	4	6	4
Oklahoma	5	4	4	4	1
Oregon	45	8	2	0	0
Pennsylvania	5	1	21	42	4
Texas	5	22	1	5	0
Utah	29	20	14	21	0
Virginia	7	3	0	0	0
Vermont	5	1	1	4	4
Wisconsin	17	2	3	36	3
West Virginia	8	12	0	50	0
Wyoming	5	2	0	0	0

Systems Actively Protecting Their Groundwater

as of October 31, 1994

State	Step	System Name	Population
ARKANSAS	1	CENTRAL CITY	4500
	1	CHEROKEE VILLAGE	2500
	1	WARD 12692 ASH FLAT	6672
	1	BAY 1	600
	2	BLACK ROCK	736
	2	CAVE CITY	1503
	2	CENTER GROVE	2500
	2	CENTER GROVE	1004
	2	COTTON PLANT	1323
	2	DARDANELLE	1800
	2	DIAMOND CITY	600
	2	FOUKE	620
	2	GRANGE-CALAMINE	575
	2	GURDON	2707
	2	GUY	200
	2	MOUNTAIN PINE	1068
	2	NEWARK	1128
	2	WILBURN	300
	2	WILLIFORD	157
	3	BELLEFONTE	200
	3	HARDY	645
	3	HORATIO	420
	3	LAWRENCE CO. REGIONAL	3000
	3	LEAD HILL	300
	3	LEWISVILLE	800
	3	LOCKESBURG	613
	3	MANILA	1500
	3	MAUMELLE	2700
	3	OGDEN	190
	3	PATTERSON	445
	3	POYEN	329
	3	QUITMAN	556
	3	SALEM	1424
	3	TYRONZA	777
	3	WEINER	655
	3	WHITE HALL	3557
	4	ALICIA	246
	4	BASSETT	265
	4	BENTON COUNTY WATER	2550
	4	BIGGERS	363
	4	BRADFORD	874
	4	CASTLE	360
	4	CHERRY VALLEY	729
	4	CROSS CO. REG.	3504
	4	CROWLEYS RIDGE RURAL	1300
	4	FISHER	302
	4	GARLAND	300
	4	GATEWAY	600
	4	GRUBBS	546
	4	HARRISBURG	1921
	4	HICKORY RIDGE	478
	4	JASPER	1000
	4	JOINER	500
	4	KEISER	805
	4	KNOBLE	503
	4	LADD	630
	4	LAFE	215
	4	LAKE CITY	1800
ARKANSAS	4	LUXORA	1750
	4	MAMMOTH SPRINGS	1158
	4	MARKED TREE	3201
	4	MARMADUKE	525
	4	MCDOUGAL	239
	4	MONETTE	850
	4	MT. SHERMAN	352
	4	OKOLONA	550
	4	PORTIA	220
	4	PRATTSVILLE	317
	4	RAVENDEN SPRINGS	238
	4	RECTOR	2336
	4	RENO	521
	4	RUSSELL	232
	4	SEDGEWICK	150
	4	SPARKMAN	300
	4	SWIFTON	900
	4	TUCKERMAN	2078
	4	VANDALE BIRDEYE	750
	4	VIOLA	320
	4	WALDO	1495
	4	WALNUT RIDGE	2500
	4	WASHINGTON	350
	4	WATSON	433
	5	BONO	450
	5	HOXIE	1500
COLORADO	1	GENOA	300
	1	HUGO	1000
	1	KARVAL	500
	1	KIOWA	1000
	1	LIMON	1000
	1	MONUMET	5000
	1	VILAS	500
	1	WETMORE (TV HILLS)	300
	2	SAN LUIS	500
FLORIDA	1	BRATT-DAVISVILLE	2655
	1	FORESTER HAVEN	150
	1	LAKE BERESFORD WATER ASSOC.	2250
	1	TOWN OF GREENVILLE	1395
	2	AUBURN WATER SYSTEM	9000
	2	BAKER WATER SYSTEM	1900
	2	MILLIGAN WATER SYSTEM	1150
	3	HOLT WATER SYSTEM	1150
GEORGIA	1	ADEL	5000
	1	ALLENTOWN	321
	1	ATHENS/CLARKE	10000
	1	BARTOW COUNTY	14000
	1	CAMILLA	5124

Systems Actively Protecting Their Groundwater

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State	Step	System Name	Population
GEORGIA	1	CARLTON	282
	1	CONCORD	211
	1	DEEPSTEP	310
	1	FARGO	300
	1	GRAHAM	350
	1	GREENVILLE	1167
	1	HAMPTON	2694
	1	HAWKINSVILLE	3671
	1	HIRAM	1389
	1	ILA	297
	1	IRWINTON	641
	1	IVEY	1053
	1	KITE	297
	1	LONE OAK	150
	1	MANNING TOWN	104
	1	METTER	3707
	1	MILLEN	3988
	1	MOLENA	300
	1	MONTICELLO	2289
	1	MONTROSE	117
	1	MOUNT AIRY	543
	1	NEWTON	703
	1	OCONEE	5000
	1	ODESSA	156
	1	PINE MOUNTAIN	949
	1	RENTZ	390
	1	REYNOLDS	1229
	1	RIVERSIDE TURF FARM	25
	1	SHELLMAN	1254
	1	SKY VALLEY	200
	1	STAPLETON	330
	1	SYCAMORE	417
	1	TALBOTTON	1046
	1	TOOMSBORO	673
	1	UVALDA	410
	1	WARWICK	488
	1	WAVERLY HALL	769
	2	BUTLER	1673
	2	BYRON	2276
	2	DEXTER	325
	2	DUBLIN	16312
	2	ELLAVILLE	1724
	2	HIGHLAND PARK	33
	2	JOHN ALFORD PLANTATION	180
	2	ODOM	336
	2	OLIVER	250
	2	PRESTON	388
	2	PRIESTER	105
	2	ROGERS CORRECTIONAL INST.	2300
	2	SOPERTON	2881
	2	SYLVANIA	3352
	2	WILEY ACRES	150
	2	WILLACOOCHEE	1230
	3	BROOKLET	1035
	3	CARISLE ESTATES	15
	3	EDISON	1182
	3	JEFFERSONVILLE	1473
	3	KEYSVILLE	290
GEORGIA	3	PEMBROKE	1400
	3	REIDSVILLE	2490
	3	WOODLAND	664
	4	BELLVEDERE ISLAND	250
	4	BOSTWICK	357
	4	CANNON BLUFF	180
	4	CENTERVILLE	2622
	4	CLAXTON	2694
	4	COLLINS	639
	4	GLENWOOD	824
	4	HAGAN	880
	4	HELENA	1256
	4	HOG HAMMOCK	170
	4	MCINTOSH COUNTY	1200
	4	NAHUNTA	951
	4	SAPELA GARDENS	228
	4	SAPELO WOODS	90
	4	SHELL POINT	80
	4	SPRINGFIELD PLANTATION	75
	4	SUTHERLAND BLUFF	80
	4	UNIDILLA	1620
	5	ADRIAN	756
	5	ALAPAHA	771
	5	ALCOVY SHORES	240
	5	BALL GROUND	640
	5	BARNESVILLE	4887
	5	BRIPATCH	300
	5	BROOKS	306
	5	CARNIGAN	275
	5	COMER	1093
	5	COMER	930
	5	CRAWFORDVILLE	594
	5	CRESENT	200
	5	DANIELSVILLE	354
	5	DUDLEY	425
	5	ENIGMA	574
	5	EULONIA	350
	5	FLOVILLA	458
	5	FOLKSTON	295
	5	GAY	175
	5	IRWINGTON	841
	5	JENKINSBURG	360
	5	JESUP	9418
	5	JONE ISLAND	150
	5	M&T	250
	5	MANSFIELD	435
	5	MERIDIAN	175
	5	ROBERTA	859
	5	ROCHELLE	1622
	5	RUTLEDGE	694
	5	TIGNAL	733
	5	TIGNALL	711
	5	TOLOMATO	150
	5	WHITE	501
	5	WRIGHTSVILLE	2526
	5	YOUNGS ISLAND	200
	5	ZEBULON	995

Systems Actively Protecting Their Groundwater

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State	Step	System Name	Population
IOWA	1	BELLEVUE	2450
	1	BLUEGRASS	1377
	1	GREENE	1142
	1	HARVEY	275
	1	HAWARDEN	2439
	1	HOPKINTON	774
	1	LAPORTE CITY	2324
	1	LONE TREE	1014
	1	MAQUOKETA	6313
	1	Maxwell	788
	1	NORA SPRINGS	1572
	1	POSTVILLE	1475
	1	WAVERLY	8444
	1	WYOMING	702
	2	Minden	540
	3	CLAY RURAL WATER	1355
	3	DEDHAM	264
	3	MOUNT VERNON	3657
	4	ALTON	986
	4	BELLE PLAINE	2903
	4	CLARION	3060
	4	COGGON	639
	4	COLUMBUS JUNCTION	1429
	4	EDGEWOOD	980
	4	ELDRIDGE	3279
	4	FAIRBANK	980
	4	FOREST CITY	4270
	4	GUTHRIE CENTER	1713
	4	JESUP	2343
	4	MOTTE	322
	4	LISBON	1458
	4	MAHASKA RURAL WATER	1138
	4	MANCHESTER	5137
	4	MARENGO	2308
	4	MONROE	1713
	4	NEW SHARON	1225
	4	POWESHEIK WATER ASSOC.	1770
	4	READLYN	858
	4	RIVERSIDE	826
	4	ROCK VALLEY	2706
	4	ROLAND	1005
	4	SHELBY RURAL WATER	381
	4	SHELLSBURG	791
	4	SOLON	1024
	4	SOUTHERN SIOUX RURAL WATER	801
	4	STORY CITY	2762
	4	STRAWBERRY POINT	1463
	4	TIPTON	3055
	4	VINTON	5040
	4	WEST BRANCH	1867
	4	WEST UNION	2783
	5	MALLARD	407
	5	PRESTON	1142
	5	SIOUX CENTER	4588

State	Step	System Name	Population
IDAHO	1	BASALT	407
	1	CAREY SEWER & WATER	130
	1	DEARY	529
	1	GENESEE	725
	1	HARRISON	226
	1	PLUMMER	804
	1	POTLATCH	790
	2	AMERICAN FALLS	3757
	2	COUNCIL - NEW WELL	831
	2	CULDESAC	3516
	2	NEW MEADOWS (NEW WELL)	534
	2	WORLEY	182
	3	FT. HALL	2000
	3	GOODING	2820
	3	LIZARD BUTTE	60
	3	MOSCOW	18519
	4	ALBION	305
	4	AMMON	5002
	4	ARROW HEAD POINT SUB.	25
	4	BLACKFOOT	9646
	4	CASCADE	877
	4	CHALLIS	1073
	4	CHUBBUCK	7791
	4	COTTONWOOD	822
	4	COUNSIL	831
	4	CRAIGMONT	542
	4	CULDESAC	280
	4	CULDESAC	280
	4	DONNELLY	200
	4	FERDINAND	135
	4	GRANGEVILLE	3226
	4	GRANGEVILLE	3226
	4	HEYBURN	2714
	4	HIDDEN LAKES SUBDIVISION	25
	4	JEROME	6529
	4	JUGHANDLE ESTATES	30
	4	JULIAETTA	488
	4	KENDRICKT	325
	4	KOOSKIA	699
	4	KUNA	1955
	4	LAKE FORK MOBILE VILLAGE	25
	4	MACKAY	574
	4	MARSING	798
	4	MIDDLETON	1851
	4	MIDVALE	110
	4	MURTAUGH	134
	4	PARMA	1597
	4	PAUL	901
	4	RAPID RIVER	60
	4	RIGGINS	443
	4	RUPERT	5455
	4	RUPERT (NEW WELL)	5455
	4	SHOSHONE	1249
	4	WEISER	4751
	4	WENDEL	1963
	4	WHITEBIRD	108
	5	NEW PLYMOUTH	1313

Systems Actively Protecting Their Groundwater

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State	Step	System Name	Population
KENTUCKY	1	AUBURN WATER & SEWER	2175
	1	AUGUSTA, CITY OF	1815
	1	BEAVER DAM MUNICIPAL	4290
	1	BIRKLE WATER SUPPLY	260
	1	CALVERT CITY MUNICIPAL	3894
	1	GOSHEN UTILITIES	4050
	1	HARDIN COUNTY DISTRICT #1	18563
	1	JONATHAN CREEK DISTRICT	4500
	1	MAYFIELD WATER/ELEC SYSTEM	9930
	1	OAK GROVE WATER DEPT.	4993
	1	SOUTH SHORE WATER WORKS	6782
	1	TRI-CITY WATER WORKS	53
	1	WEST POINT WATER & SEWER	1370
	2	BRACKEN COUNTY DIST. #1	1540
	2	CADIZ WATER DEPARTMENT	4834
	2	COOL WATER WORKS, INC.	300
	2	GUTHRIE WATER WORKS	2105
	2	HICKMAN WATER & SEWER	4778
	2	WARREN COUNTY WATER DIST.	41599
	3	CANEY CREEK WATER DISTRICT	300
	3	CARROLLTON UTILITIES	5940
	3	CONSUMERS WATER DISTRICT	3302
	3	CUBA WATER WORKS	150
	3	FLEMING NEON WATER COMPANY	2300
	3	HENRY COUNTY DISTRICT #2	9531
	3	HICKORY WATER DISTRICT	3825
	3	SEDALIA WATER DISTRICT	518
	3	SOUTH GRAVES CO. WATER DIST.	2310
	3	TRIMBLE CO. WATER DISTRICT #1	3500
	4	ARLINGTON WATER & SEWER	806
	4	BANDANA WATER DISTRICT	325
	4	BARDWELL	1712
	4	BARLOW	1000
	4	BEN-DE-FIELD WATER ASSOC.	60
	4	BENTON	6500
	4	CALVERT CITY MUNICIPAL	3500
	4	CARROLL CO. W.D.	3300
	4	CLOVERPORT	2010
	4	CUNNINGHAM WATER DISTRICT	300
	4	EDDYVILLE	2364
	4	FANCY FARM WATER DISTRICT	1623
	4	FULTON MUNICIPAL	5801
	4	GARRISON/QUINCY W.D.	1400
	4	HARDEMAN WATER DISTRICT	1030
	4	HAWESVILLE	1914
	4	HINDMAN	600
	4	KEVIL WATER & SEWER	1040
	4	LACENTER	1441
	4	LEDBETTER W.D.	2565
	4	LEWISPORT	2244
	4	MEADE COUNTY WATER DIST.	1200
	4	MILTON	2626
	4	NORTH MARSHALL WATER DIST.	1100
	4	NORTONVILLE	2729
	4	OLDHAM CO. W.D.	8766
	4	REIDLAND W.D.	7006
	4	SANDY HOOK W.D.	7921
KENTUCKY	4	SMITHLAND WATER & SEWER	858
	4	SYMSONIA WATER DISTRICT	798
	4	TRENTON	729
	4	VANCEBURG UTILITIES	3240
	4	WARSAW	1400
	4	WEBSTER COUNTY WATER DIST.	1898
	4	WESTERN LEWIS-RECTORVILLE	2230
	4	WESTERN MASON CO. DISTRICT	2010
	4	WHEELWRIGHT	1100
	4	WHITE PLAINS	1320
	4	WICKLIFFE	1705
	4	WINGO	957
	4	WURTLAND	1155
	5	WORTHINGTON	2300

State	Step	System Name	Population
LOUISIANA	3	REDHILL WATER SYSTEM	1750
	4	CECILIA WATER CORP.	8000
	4	CITY OF JEANERETTE	15200
	4	CITY OF ST. MARTINVILLE	7200
	4	EAST ALLEN PARISH	2520
	4	FOURTH WARD LIVINGSTON	2400
	4	JEFF DAVIS CENTRAL	2740
	4	LAKE ST. JOHN WATERWORKS	2200
	4	SOUTH BOSSIER WATER SYSTEM	1050
	4	TOWN OF ERATH	2800
	4	TOWN OF LAKE PROVIDENCE	9600
	4	VILLAGE OF TURKEY CREEK	5600
	4	WEST WINNSBORO WATER	1505
	5	AVOYELLES PARISH DISTRICT # 1	3000
	5	BAYOU BONNE IDEE WATER	980
	5	CITY OF BUNKIE	7500
	5	COTEAU WATER SYSTEM INC.	4550
	5	KOLIN-RUBY WISE WATER	3500
	5	LENA WATER SYSTEM INC.	3430
	5	LIDDIEVILLE WATER SYSTEM	740
	5	MILTON WATER SYSTEM, INC.	2450
	5	MONTICELLO WATER SYS.	1000
	5	MORROW WATER SYSTEM	2100
	5	NORTH FRANKLIN WATER	5080
	5	PIONEER-DARNELL WATER SYS.	2480
	5	POWHATAN WATERWORKS	880
	5	PRAIRIE RONDE WATER SYS.	2880
	5	RAPIDES PARISH DISTRICT #3	17500
	5	ROBELINE-MARTHAVILLE	1600
	5	SOUTH BONNE IDEE WATER	500
	5	SOUTH GRANT WATER SYSTEM	3300
	5	SOUTHWEST ALLEN PARISH	4720
	5	ST. LANDRY CONS.	1200
	5	TOWN OF ARNAUDVILLE	3320
	5	TOWN OF CHENEYVILLE	1320
	5	TOWN OF DELCAMBRE	2200
	5	TOWN OF GRAND COTEAU	1800
	5	TOWN OF LEONVILLE	6800
	5	TOWN OF MANGHAM	2100
	5	TOWN OF ST. FRANCISVILLE	2800

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State	Step	System Name	Population
LOUISIANA	5	TOWN OF ST. JOSEPH	8000
	5	TOWN OF URANIA	1750
	5	UNITED WATER SYSTEM	2555
	5	VILLAGE OF DRY PRONG	770
	5	VILLAGE OF EPPS	1400
	5	VILLAGE OF MAURICE	800
	5	VILLAGE OF MER ROUGE	1400
	5	VILLAGE OF MOREAUVILLE	1800
	5	VILLAGE OF PALMETTO	2520
	5	WARD THREE AVOYELLES DIST.	2100

State	Step	System Name	Population
MASS	1	4-H CENTER	200
	3	BLUE JAY RESTAURANT	200
	3	BRIMFIELD ELEMENTARY	405
	3	MANCHAUG WATER DISTRICT	165
	3	MASONIC HOME, INC.	300
	3	PRINCE ELEMENTARY SCHOOL	403
	4	ASHFIELD	500
	4	ASHMERE APARTMENTS	60
	4	ASHMERE MANOR	120
	4	ASHMERE WATER SERVICE	66
	4	BARRE MOBILE HOME PARK	138
	4	BAYSIDE WATER ASSOCIATION	108
	4	BECKET SCHOOL	25
	4	BERNARDSTON	1300
	4	BISSELVILLE	150
	4	BRIARWOOD ESTATES	165
	4	BROOKFIELD MEADOWS	72
	4	CONGREGATION OF MARIANS	85
	4	COUNTRYSIDE VILLAGE	25
	4	ERVING PAPER MILLS	330
	4	GRANVILLE	126
	4	GRISWOLDVILLE	125
	4	HARDWICK ELEMENTARY	387
	4	HIGH LAWN FARM	50
	4	HUBBARDSTON CENTER SCHOOL	407
	4	JUNIPER APTS	86
	4	KARL STORZ, INC.	117
	4	KRIPALU CENTER	380
	4	LINDA MANOR	220
	4	MONROE BRIDGE	75
	4	MONTEREY	200
	4	MOUNT MACHUSETT SKI CORP.	3000
	4	MT. VIEW NURSING HOME	57
	4	NANATOMQUA	255
	4	NEW BRAINTREE SCHOOL	107
	4	OAKHAM SCHOOL	204
	4	OLD FARM WATER TRUST	45
	4	SACRED HEART ACADEMY	620
	4	SHELBURNE FALLS	2270
	4	ST. JOSEPH'S ABBEY	75
	4	STAFFORD HEIGHTS	144
	4	TEMPLETON	5000
	4	WAGON WHEEL COOP	221

State	Step	System Name	Population
MASS.	4	WARREN	1750
	4	WATERVIEW ASSOCIATES	100
	4	WESTPORT	25
	4	WOODLAND ESTATES	140
	5	CLIFFSIDE APTS	500
	5	GOULD FARM	90
	5	KOLBURNE SCHOOL	240
	5	MARLBORO ACADEMY	130
	5	MT. HERMON SCHOOL	650
	5	PETERSHAM	60
	5	SOUTHFIELD	87

State	Step	System Name	Population
MARYLAND	2	Town of Rock Hall	1584
	3	Town of Berlin	2656
	3	Town of Boonsboro	2445

State	Step	System Name	Population
MAINE	1	Cold Springs Water Co.	38
	1	Danforth Water District	450
	1	Fort Kent Utilities District	2040
	1	Gray Water District	2320
	1	Monmouth Water Assoc. #1	478
	1	Monson Utility District	453
	1	Phil Dow #1	36
	1	Phil Dow #2	54
	1	Sacoppee Valley School	125
	1	Sunday River (11 systems, 28 wells)	2000
	1	VanBuren Water District	3102
	1	Vinalhaven	900
	1	Winterport Water District	534
	2	Chick Orchards	34
	2	Cornish Water District #1	498
	2	Farmington Village Corp	5026
	2	North New Portland	148
	2	Oak Hill Mobile Home Park	228
	3	Clinton Water District	1250
	3	Kohatosi Campground # 1	203
	3	Lake Arrowhead	2000
	3	Lincoln Water Distric	2800
	3	Yarmouth Water District	8383
	4	Paris Utility District	3000

State	Step	System Name	Population
MICHIGAN	1	ADA TWP.	975
	2	ADDISON	655
	2	BEAVERTON	1025
	2	CASSAPOLIS	1933
	2	SHEPHERD	1534
	2	WHITE PIGEON	1478
	3	CASS CITY	2258
	3	COLEMAN	1429
	3	GREENVILLE	8019

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State	Step	System Name	Population
MICHIGAN	3	HARBOR SPRINGS	1567
	3	LAKEVIEW	1139
	3	LAWTON	1558
	3	LITCHFIELD	1353
	3	PENTWATER	1165
	3	UNION CITY	1667
	3	UNIONVILLE	578
	4	ALPHA TWP	229
	4	BANGOR	2001
	4	BELDING	5634
	4	BUCHANAN	5142
	4	CARSON CITY	1229
	4	CHARLOTTE	8251
	4	CHATHAM	315
	4	CHELSEA	3816
	4	CLINTON	2342
	4	CONCORD	900
	4	CONSTANTINE	1680
	4	COPPER HARBOR/GRANT TWP	75
	4	CRYSTAL FALLS TWP	1965
	4	DURAND	4241
	4	ELKTON	1022
	4	ELSIE	1022
	4	EVART	1945
	4	EWEN (McMILLIAN TWP)	500
	4	GLADWIN	2479
	4	GUN LAKE	357
	4	HARRISON	1700
	4	ITHICA	2950
	4	KALEVA	445
	4	LAKE ODESSA #4 AND #5	2171
	4	MANISTEE	7566
	4	MIDDLEVILLE	1797
	4	MILFORD	5041
	4	MORENCIE	2110
	4	PARCHMENT	1816
	4	PECK	606
	4	PERRINTON	448
	4	PIGEON	1247
	4	PRESQUE ISLE	800
	4	QUINCY	1569
	4	ROSCOMMON	834
	4	RUDYARD TOWNSHIP	300
	4	SHELBY #1 AND #3	1624
	4	SHELBY #2 4 SPRINGPORT	675
	4	THREE OAKS	2625
	4	VERMONTVILLE	832
	4	VICKSBURG	2224
	4	WHITE CLOUD	1101
	5	COLDWATER	9461

State	Step	System Name	Population
MISSOURI	1	CARDWELL	792
	1	NEW HAVEN	1757
	1	OSAGE BEACH	2599
	1	ST CHARLES COUNTY	

State	Step	System Name	Population
MISSOURI	2	BUTLER #1E	989
	2	BUTLER #1N	2562
	2	BUTLER #1S	1900
	2	BUTLER #1W	1030
	2	THAYER	3135
	2	WEST PLAINS #1	8300
	3	EAST PRAIRIE	5719
	3	IRONDALE	490

State	Step	System Name	Population
MONTANA	1	BECREEK VILLAGE	72
	1	BELGRADE	3300
	1	BLUE SKY	297
	1	BOULDER	1500
	1	BROWNING	6000
	1	EUREKA	1180
	1	FAIRMONT HOT SPRINGS	120
	1	MIDVALE	115
	1	VALIER	765
	1	WHITEHALL	1170
	1	WINNETT	324
	3	CLYDE PARK	243
	3	HIGHWOOD	300
	3	SOUTH CHOTEAU COUNT	127

State	Step	System Name	Population
NORTH CAROLINA	1	BELLARTHUR WATER CORP.	8500
	1	GASTON COUNTY	175000
	1	GATES COUNTY-WATER	7330
	1	HIGHLAND HILL WATER	250
	1	LAND HARBOR WATER 3500	
	1	LAURELWOOD MOBILE HOME PARK	75
	1	NORTHAMPTON COUNTY SYS.#1	800
	1	NORTHAMPTON COUNTY SYS.#2	1500
	1	NORTHAMPTON COUNTYSYS.#3	500
	1	NORTHAMPTON COUNTY SYS.#4	400
	1	NORTHAMPTON COUNTY SYS.#5	600
	1	NORTHAMPTON COUNTY SYS.#6	1000
	1	NORTHAMPTON COUNTY SYS.#7	200
	1	NORTHAMPTON COUNTYSYS.#8	500
	1	PASQUOTANK COUNTY WATER	11342
	1	STRAWBERRY HILL WATER ASSOC.	90
	1	TOWN OF BLACK MOUNTAIN	7100
	1	TOWN OF ELK PARK	600
	1	TOWN OF MONTREAT	700
	1	TOWN OF PINEHURST	9000
	1	TOWN OF SANTEETLAH	300
	1	TOWN OF SEVEN LAKES	4000
	1	TOWN OF SIMS	120

State	Step	System Name	Population
NEW HAMPSHIRE	1	MOUNTVALE	102
	2	C & C WATER SYSTEM	2000
	2	KUNCANOWET HILLS	35

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State	Step	System Name	Population
NEW HAMPSHIRE	3	FOREST PARK VILLAGE	54
	3	RISING GENERATION DAYCARE	84
	3	RYE	4000
	3	SANBOURNE HIGH SCHOOL	600
	4	BEECH HILL	187
	4	CARDIGAN MOUNTAIN	270
	4	DUBLIN SCHOOL	143
	4	EASTMAN	3500
	4	HINSDALE	2500
	4	YANKEE PUBLISHING	80
	5	HILL	325
	5	MARLBOROUGH	885
	5	PILLSBURY LAKE	445
	5	WARNER	576

State	Step	System Name	Population
OKLAHOMA	1	BECKHAM RWD #2	704
	1	CHOCTAW RWD #1	1955
	1	GRANITE PWA	11
	1	NASH PWA	301
	1	WASHITA RWD #2	1686
	2	ALINE PWA	313
	2	CANUTE PWA	676
	2	PAWNEE RWD #1	2249
	2	PAYNE RWD #3	1800
	3	CUSTER RWD #3	1168
	3	KONAWA PWA	1711
	3	MAJOR RWD #1	1331
	3	SEILING PWA	1676
	4	FAIRVIEW PWA	3370
	4	GARFIELD RWD #5	1334
	4	MCLOUD PWA	4016
	4	MINPWA	1489
	5	CALVIN PWA	502

State	Step	System Name	Population
OREGON	1	BLY WATER DISTRICT	209
	1	BUELL RED PRAIRIE DISTRICT	600
	1	CITY OF CASCADE LOCKS	1000
	1	CITY OF DUNDEE	1817
	1	CITY OF FAIRVIEW	1910
	1	CITY OF HALFWAY	380
	1	CITY OF MOSIER #1	255
	1	CITY OF MT. VERNON	620
	1	CITY OF PRINEVILLE	5360
	1	CITY OF SHERIDAN	4300
	1	CITY OF SHERWOOD	3300
	1	CITY OF UNION	2030
	1	CITY OF WOOD VILLAGE	2930
	1	DAMASCUS WATER DISTRICT	5500
	1	FAIRVIEW WATER DISTRICT	1500
	1	FERN VALLEY ESTATES DIST	175
	1	FLEMING MIDDLE SCHOOL	547
	1	FRUITDALE ELEMENTARY	294
	1	FT. VANNOY ELEMENTARY	354

State	Step	System Name	Population
OREGON	1	HIDDEN VALLEY HIGH SCHOOL	750
	1	ILLINOIS VALLEY HIGH SCHOOL	421
	1	JEROME PRAIRE ELEMENTARY	230
	1	KNAPPA WATER ASSOCIATION	1200
	1	LAKEWOOD UTILITIES	300
	1	LINCOLN SAVAGE MIDDLE SCHOOL	550
	1	MADRONA ELEMENTARY	460
	1	MANZANITA ELEMENTARY	406
	1	MERLIN ELEMENTARY	153
	1	MURPHY ELEMENTARY	60
	1	NESTLED IN HILLS MOBILE ESTATES	50
	1	NORTH VALLEY HIGH SCHOOL	716
	1	OAKVILLA MOBILE HOME PARK	100
	1	ORCHARD HEIGHTS 5	10
	1	PERRYDALE WATER ASSOCIATION	1500
	1	PINECREST WATER DISTRICT	87
	1	PIONEER VILLAGE WATER INC.	69
	1	POLEHN HEIGHTS WATER ASSOC.	130
	1	RICKREALL COMMUNITY WATER	990
	1	ROATS WATER SYSTEMS, INC	2990
	1	SELMA ELEMENTARY	145
	1	SOUTHWOOD PARK DISTRICT	950
	1	TUMALO RIM WATER DIST.	153
	1	WI-NE-WATER ASSOCIATION	150
	1	WILLIAMS ELEMENTARY	140
	1	WOLF CREEK ELEMENTARY	125
	2	CITY OF DONALD	290
	2	CITY OF DUFUR #1	531
	2	CITY OF ANGEL	2975
	2	EAGLE CREST RESORT	1000
	2	CASA MIA ASSOC. DIST. INC	125
	2	LAKE CREEK RANCH	75
	2	PACIFIC CITY WATER DISTRICT	1000
	2	PIONEER PARK WATER CO-OP	40
	3	MCKAY ACRES IMPROVEMENT DIST	75
	3	ANGEL ABBEY	180

State	Step	System Name	Population
PENN.	1	CENTER COUNTY MUNICIPAL	9700
	1	FAWN LAKE FOREST WATER	1578
	1	NORTHEASTERN UTILITIES	91
	1	UNION TOWNSHIP MUNICIPAL	2400
	1	WATERVILLE WATER ASSOCIATION	68
	2	HAWLEY WATER COMPANY	1800
	3	CAIRNBROOK ASSOCIATION	600
	3	CARROLLTOWN BOROUGH	1500
	3	CLEARFIELD COUNTY MUNICIPAL	1490
	3	CONNEAUTVILLE BOROUGH	1032
	3	COOPER TOWNSHIP MUNICIPAL	2500
	3	EAST EARL TOWNSHIP	1000
	3	GROVE CITY BOROUGH	9052
	3	HEIDELBURG TOWNSHIP	3791
	3	KEYSTONE POCONO HOME	85
	3	KUTZTOWN/TOPTON/LYONS	5600
	3	LINESVILLE BOROUGH	1200
	3	McVEYTOWN BOROUGH	600

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State	Step	System Name	Population
PENN	3	MONTOURSVILLE BOROUGH	4800
	3	NEW HOLLAND BOROUGH	3970
	3	SAEGERTOWN BOROUGH	1066
	3	SALTILLO BOROUGH	300
	3	SHADYSIDE VILLAGE	200
	3	SLIPPERY ROCK MUNICIPAL	9900
	3	WALKER TOWNSHIP ASSOCIATION	2340
	3	WESTERN UTILITIES INC	1164
	3	WESTFORD CROSSING	375
	4	AARONSBURG WATER PIPE	569
	4	ABBOTTSTOWN BOROUGH	600
	4	ASPINWALL BOROUGH	2800
	4	BAINBRIDGE MUNICIPAL	1002
	4	BARKEYVILLE BOROUGH	250
	4	BERLIN BOROUGH	2000
	4	BOROUGH OF PILLOW	380
	4	BUHL COMMUNITY WATER CO	160
	4	CHESWICK BOROUGH	1971
	4	CLYMER BOROUGH AUTH	1500
	4	CONNEAUTVILLE BOROUGH	1200
	4	CORAOPOLIS BOROUGH	7290
	4	DUQUESNE BOROUGH	8300
	4	E. ARMSTRONG COUNTY MUNI	900
	4	E.J. GULICK MHP	96
	4	EDGEWORTH BOROUGH	5500
	4	GUYS MILLS	175
	4	HARMER TOWNSHIP	3144
	4	INDIANA CO./CREEKSIDE	337
	4	INDIANA CO./HEILWOOD	2172
	4	INDIANA CO./JACKSONVILLE	4800
	4	KREAMER MUNICIPAL AUTHORITY	900
	4	KUTZTOWN BOROUGH	9000
	4	LAKE CITY BOROUGH	880
	4	MOUNTAIN WATER AUTHORITY	500
	4	MT. JOY TOWNSHIP	925
	4	PINE GROVE TOWNSHIP	500
	4	PORT MATILDA	697
	4	REIGELSVILLE BOROUGH	910
	4	ROUSEVILLE BOROUGH	583
	4	ROUSEVILLE BOROUGH	575
	4	SALISBURY BOROUGH	1080
	4	SEWICKLEY BOROUGH	7575
	4	SHARPSBURG BOROUGH	3781
	4	SPRINGBORO BOROUGH	600
	4	SPRINGDALE BOROUGH	3860
	4	TAKE ACTION MPH	56
	4	VILLAGE OF BAINBRIDGE	625
	4	WAYMART WATER CO	350
	4	WHITE HAVEN BOROUGH	1500
	4	WHITE HAVEN CENTER	387
	4	WORTHINGTON MUNICIPAL	1425
	5	CARROLLTOWN BOROUGH	1500
	5	CASTLE ROCK	200
	5	FREDONIA BOROUGH	783
	5	WALKER TWP WATER ASSOC	2340
TEXAS	1	CITY OF DIBOLL	5000
	1	GAP WATER COMPANY	300
	1	NORTH PARK W.S.C.	210
	1	PINE PRAIRIE W.S.C. SYSTEM	680
	1	ROBERTSON COUNTY W.S.C.	1950
	2	AXTELL W.S.C.	470
	2	CADDO LAKE W.S.C.	1200
	2	CHALK HILL S.U.D.	2500
	2	CITY OF ELGIN	5000
	2	CITY OF SOUR LAKE	1500
	2	CRESENT HEIGHTS W.S.C.	1650
	2	CROSS ROADS W.S.C.	2550
	2	DIANA W.S.C.	3900
	2	DUCK CREEK W.S.C.	1600
	2	FOURWAY W.S.C.	2800
	2	JACKSON W.S.C.	2758
	2	JOHNSON COUNTY W.S.C.	7200
	2	LEAGUEVILLE W.S.C.	1275
	2	LIBERTY CITY W.S.C.	4000
	2	LINDALE RURAL W.S.C	2000
	2	M&M W.S.C	2400
	2	MAURICEVILLE W.S.C.	5000
	2	NEW HOPE W.S.C	2000
	2	QUAIL CREEK M.U.D	900
	2	RAMEY W.S.C	1500
	2	VIRGINIA HILL W.S.C	750
	2	WESTWOOD UTILITY'S	250
	3	MILLERVIEW - DOOLE W.S.C	900
	4	CITY OF VAN HORN	2950
	4	FORT DAVIS W.S.C	1122
	4	GOFORTH W.S.C.	4100
	4	GUM SPRINGS W.S.C	6200
	4	GUNTER RURAL W.S.C	2550

State	Step	System Name	Population
UTAH	1	ALPINE	2804
	1	AURORA	975
	1	CHURCHWELLS	300
	1	COALVILLE	1680
	1	COPPERTON	1092
	1	EDEN	1232
	1	ELSINORE	683
	1	ENOCH	1350
	1	EUREKA	1060
	1	FAYETTE	252
	1	HEBER CITY	5600
	1	LEHI	9044
	1	LEWISTON	1656
	1	LINDON	3428
	1	MANTUA	504
	1	MAPLETON	3396
	1	MEADOW TOWN	327
	1	MOAB	7500
	1	MT. PLEASANT	3284
	1	NEPHI CITY	2451

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State	Step	System Name	Population
UTAH	1	NORTH LOGAN	3116
	1	NORTH OGDEN	9500
	1	REDMOND	720
	1	RIVERDALE	5576
	1	SALEM	2800
	1	SPRING CITY	680
	1	SUMMIT WATER DIST.	1600
	1	TREMONTON CITY	4800
	1	VERNON	428
	2	ANGUS WATER CO.	300
	2	BICKNELL	735
	2	BOULDER	78
	2	COVE SSD	268
	2	DELTA CITY	5100
	2	DINOSAUR NAT'L PARK	100
	2	EPHRAIM	4500
	2	FAIRVIEW	1170
	2	GRANGER HUNTER IMP. DISC.	8600
	2	HONEYVILLE	1200
	2	MILLVILLE CITY SPRING	1300
	2	MORONI Well # 2	1644
	2	NEW CASTLE WATER	300
	2	NEW HARMONY WELL	146
	2	NIBLEY TOWN SPRING	1350
	2	PROVIDENCE CITY SPRING	3600
	2	RIVER HIGHTS SPRING	1274
	2	ROOSEVELT	5500
	2	WOODS CROSS	5371
	3	ANGEL SPRINGS SSD	25
	3	CASTLE VALLEY SSD	70
	3	KANAB	3404
	3	LEMINGTON	325
	3	MORGAN	2640
	3	NEW HARMONY	146
	3	PANGUITCH CITY	1500
	3	SCIPIO TOWN	290
	3	SPANISH VALLEY	1900
	3	STERLING WELL	280
	3	THATCHER-PENTROSE	700
	3	TROPIC TOWN	389
	3	UINTHA HIGHLANDS	2142
	3	WOODLAND WATER	150
	4	ANNABELLA	710
	4	AURORA	1180
	4	CASTLE DALE S.S.D. WELL #3	1800
	4	CASTLE DALE SPEC SERV DIST	3500
	4	ELSINORE	525
	4	ENTERPRISE ESTATES	50
	4	GOSHEN	580
	4	HENEFER WATER CO	550
	4	INDIAN RIDGE SUBD	22
	4	JOSEPH	400
	4	KAMAS	1648
	4	KOOSHAREM	210
	4	MANTI	3600
	4	MONROE	1988

State	Step	System Name	Population
UTAH	4	PERRY	1360
	4	PINE VALLEY MT.WATER.	100
	4	PLEASANT VIEW	3200
	4	SPRING CITY	825
	4	STERLING	350
	4	TAYLOR WEST WEBER	3872
	4	WANSHIP MUTUAL WATER	360

State	Step	System Name	Population
VIRGINIA	1	CARROLL COUNTY PSA	1445
	1	CRAIG PSA	1360
	1	DALEVILLE WATER, INC.	292
	1	FLOYD CO. PSA	1200
	1	TOWN OF TROUTVILLE	550
	1	TOWN OF GLASGOW	1000
	1	TOWN OF HILLSVILLE	2700
	2	CATAWBA HOSP	500
	2	FERRUM PSA	2000
	2	WILLIAMSBURG COURT, INC	552

State	Step	System Name	Population
VERMONT	1	EAST CALAIS	94
	1	GRANITEVILLE FIRE DISTRICT	700
	1	MORRISVILLE	4100
	1	PITTSFORD	2000
	1	WOODSTOCK	3000
	2	OKEMO MTN., INC	200
	3	EAST MOUNTAIN WATER CORP.	64
	4	DERBY CENTER	900
	4	EAST BERKSHIRE	225
	4	ENOSBURG FALLS	1960
	4	HYDE PARK	500
	5	EAST FAIRFIELD	230
	5	EAST HIGHGATE	50
	5	NORTH MONTPELIER	35
	5	PEACHAM	210

State	Step	System Name	Population
WISCONSIN	1	ALBANY	1140
	1	ALGOMA	3353
	1	BARABOO	9203
	1	BELLEVUE	8500
	1	CAMBRIDGE	963
	1	CHILTON	3240
	1	EASTMAN	369
	1	FALL RIVER	842
	1	HARMONY GROVE	600
	1	JACKSON	2486
	1	LAKE GENEVA	5979
	1	LANCASTER	4192
	1	MERRIMAC	392
	1	MONTELLO	1329
	1	SAUK CITY	3019

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State	Step	System Name	Population
WISCONSIN	1	ST NAZIANZ	693
	1	DELLS	2393
	2	DEERFIELD (NEW WELL)	1678
	2	HARTFORD	8635
	3	MILLADORE	331
	3	PRAIRIE DU SAC	2380
	3	WARRENS	343
	4	AMHERST	701
	4	ARENA	451
	4	AVOCA	505
	4	BOYD	683
	4	BRANDON	862
	4	COTTAGE GROVE	888
	4	DARBOY	1680
	4	DEERFIELD	1617
	4	DOWNSVILLE	262
	4	DURAND	2047
	4	EAGLE RIVER	1374
	4	EDG11944 ELROY	1533
	4	FALL CREEK	1034
	4	GREEN LEAF S.D.	523
	4	HOLMEN	2411
	4	HUDSON	6769
	4	JUNCTION CITY	523
	4	LUCK	1080
	4	MAZOMANIE	1248
	4	OAKFIELD	1003
	4	PARK FALLS	3210
	4	PHELPS	500
	4	PLOVER	5310
	4	PORTAGE	7896
	4	REDGRANITE	1009
	4	RIB LAKE	945
	4	RIDGEWAY	503
	4	SHARON	1280
	4	SPRING GREEN	1265
	4	TOMAH	7204
	4	WAUTOMA	1784
	4	WHEELER	231
	4	WHITING	2050
	4	WILTON	465
	4	WINDSOR S.D.	3500
	4	WYOCENA	548
	5	HUSTLER	147
	5	LAKE DELTON	1470
	5	PARDEEVILLE	1630

State	Step	System Name	Population
WEST VIRGINIA	1	ALPINE LAKE	786
	1	BLUEWELL PSD	6636
	1	HUNDRED-LITTLETON PSD	1065
	1	PCPSD-CIRCLEVILLE	150
	1	PCPSD-UPPER TRACT	250
	1	RED SULPHUR PSD	2679
	1	UNION	972
	1	WOODS H.O.A. #1	2041
	2	BENWOOD	2000
	2	HEDGESVILLE PSD	3189
	2	HILLSBORO	332
	2	MATHENY PSD	720
	2	MCMECHEN	4200
	2	MOUNDSVILLE	13770
	2	PENDLETON COUNTY PSD	660
	2	STO	3261
	2	VIENNA	15000
	2	WARDENSVILLE	800
	2	WELLSBURG	3963
	2	WOODS H.O.A. #2	583
	4	BATH	3618
	4	BCPSD BAKER HEIGHTS	750
	4	BEECH BOTTOM	750
	4	BERKELEY COUNTY PSD	11400
	4	CAMP CONLEY PSD	450
	4	CITY OF BELMONT	1133
	4	CITY OF GLEN DALE	3114
	4	CITY OF PT. PLEASANT	8925
	4	CITY OF RAVENSWOOD	6269
	4	CITY OF ST. MARYS	3305
	4	COLIN ANDERSON CEN.	200
	4	COTTAGEVILLE PSD	2264
	4	CRAB CREEK	2216
	4	DANESE PSD	1126
	4	FAIRVIEW	1215
	4	FRANKLIN	1300
	4	FRIENDLY PSD	627
	4	GAP MILLS PSD	537
	4	GEENBRIER PSD NO. 2	1916
	4	GLENWOOD FOREST	1200
	4	GRANDVIEW-DOOLING PSD	1650
	4	HAMMOND PSD	2700
	4	HARMAN	350
	4	HELEN	450
	4	JUNIOR	600
	4	LAKIN	1205
	4	LETART	3151
	4	LUBECK PSD	9875
	4	MARSHALL CO. PSD NO.2	1620
	4	NEW CUMBERLAND	1920
	4	NEW MARTINSVILLE	9600
	4	NEWELL	2625
	4	NORTON-HARDING-JIMTOWN PSD	1100
	4	OAKLAND PSD	1725
	4	PADEN CITY	4472
	4	PAGE-KINCAID PSD	2178
	4	RUPERT	1783
	4	ST. MARYS (2)	2700
	4	STOTESBURY	105
	4	TERRA ALTA	1950
	4	TOWN OF ELEANOR	2090
	4	TOWN OF HARTFORD	690
	4	TOWN OF LEON	519
	4	TOWN OF MASON	2250
	4	TOWN OF NEW HAVEN	2264

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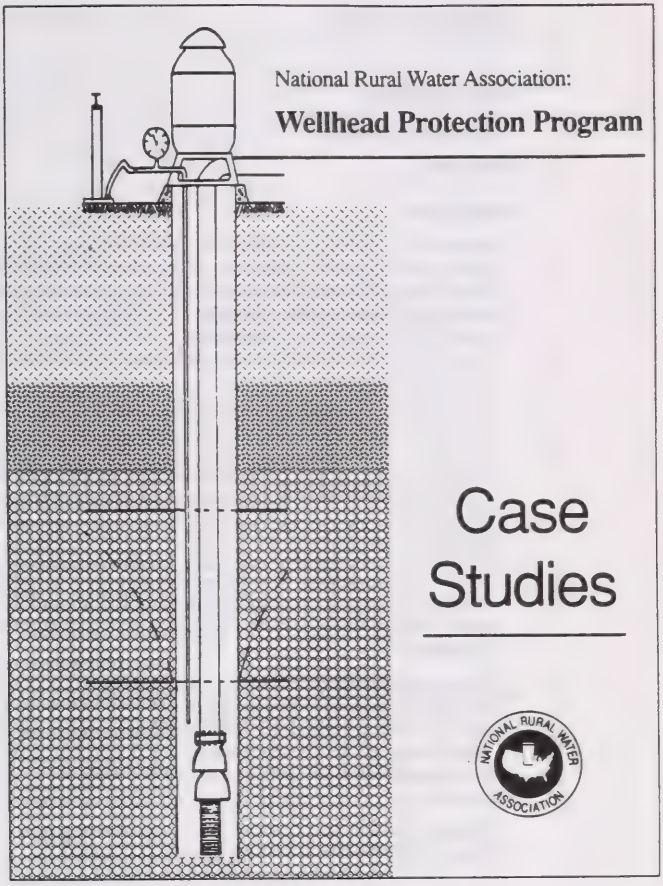
State	Step	System Name	Population
WEST VIRGINIA	4	TOWN OF RAINELLE	2850
	4	TUNNELTON	763
	4	UNION SPRINGS	972
	4	UNION-WILLIAMS PSD	2100
	4	WHITE SULPHUR SPRINGS	5573

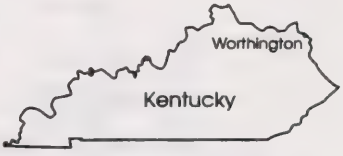
State	Step	System Name	Population
WYOMING	1	CENTENNIAL	100
	1	HARTVILLE	50
	1	MILLS	640
	1	WAMSUTTER	260
	1	WRIGHT WATER & SEWER	1240
	2	CAMP GUERNSEY	300
	2	SUPERIOR	273


National Rural Water Association:
Wellhead Protection Program
Case
Studies
NATIONAL RURAL WATER ASSOCIATION

Chapter Two

Case Study:

City of Worthington, Kentucky



Description:

Worthington, Kentucky, located in the northeast corner of the state, is situated on a narrow strip of flat, alluvial soil between the Ohio River to the north and hills to the south. Elevations at Worthington range from 540 to 560 feet. The hills to the south range in elevation from 600 to 860 feet. Two streams that provide drainage through residential and commercial areas of neighboring communities flow through Worthington.

Worthington's well field and shallow aquifer lie between the two drainage streams. There are three wells operating simultaneously, providing service to 660 connections. Two of the wells were constructed in 1968, and an additional well was constructed in 1978. Permitted capacity from the three wells combined is 250,000 gallons per day. Daily flow averages 139,000 gallons. Annual production is 50,739,000 gallons.

Water levels range from 41 to 49 feet with a casing depth of 65 feet and a screen length of 10 feet. The wells are fenced and located above flood level on land owned by the city of Worthington. They are not grouted.

A raw water sample taken by the Environmental Protection Agency (EPA) on December 5, 1990, indicated high levels of iron and manganese. The city of Worthington was assured by the EPA that the high levels of iron and manganese posed no health risk, but could result in some aesthetic water problems. No other contaminants were detected.

The high levels of iron and manganese pose specific treatment problems. Chlorine and iron removal treatments are used.

Wellhead Protection Issues:

The proximity of a railroad yard, private wells and septic systems within 150 feet of the well field prompted an investigation into possible ground water contamination. Community leaders were aware of potential threats, but no action had been taken prior to a presentation by Clem Wethington, a Ground Water Technician for the Kentucky Rural Water Association (KRWA).

Results of a contamination investigation showed no current contamination problem.

Program Initiation:

At the time of the groundwater technician's first presentation to the leaders of Worthington, a state groundwater branch was being organized. The driving forces behind well head protection are the KRWA and the Kentucky Division of Water Resources.

The city of Worthington began the Well Head Protection program in May of 1991.

STEP ONE: Selecting the Planning Team

In meetings with the mayor and water system supervisor, it was determined that the planning team should consist of individuals most familiar with the water system and the community. A four member planning team was formed including city employees and city council members.

Selecting and organizing the planning team took four days.

The team included:

- Water System Supervisor - An operator of several water systems in the area and the most knowledgeable on the operation of the water treatment plant.
- Wastewater System Operator - An individual with insight into the community and knowledge of old well sites, storage tanks, etc.
- Two Council Members - Knowledgeable citizens with an understanding of public needs and community history, as well as the ability to establish educational programs and draft ordinances. They also provide a link to other community leaders in the area.

STEP TWO: Delineating the Protection Area

The delineation of a well head protection area began July 17, 1991 and took five months. The Groundwater Technician and the planning team discussed various methods and decided to proceed with delineation of an area that could be managed immediately.

Methodologies discussed as options were Arbitrary Fixed Radius, Calculated Fixed Radius, and Analytical methods.

The Arbitrary Fixed Radius method was chosen in conjunction with designated management zones. This method was chosen due to the difficulty in obtaining the necessary data or professional assistance needed to complete the other options. It was determined that other methods might be used to fine tune the protection area in the future, based on increased data and the availability of assistance.

The planning team used city boundary maps and topographic maps to define the well head protection area.

The protection area was divided into three zones with different management priorities and strategies (see ***Figure 2-1***).

- A **Primary Protection Zone** was delineated by drawing a circle using a 200 foot radius around each well. This area will receive the most stringent protection.
- **Management Zone One** is the same area as the city's limits.
- **Management Zone Two** was determined by drawing an arbitrary radius circle around the well field. This area ends where parts of the circle intersect with boundaries of Wurtland, Ky, a neighboring community. Wurtland's wellhead protection area and Worthington's zone two overlap (see ***Figure 2-2***). It was determined that zone two would be managed using a public education approach, with stricter protection measures instituted if deemed necessary and approved by the city council.

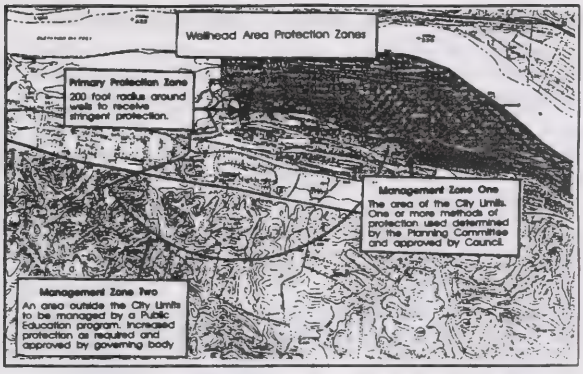

Wellhead Area Protection Zones
Primary Protection Zone
200 foot radius around wells to receive stringent protection.
Management Zone One
The area of the City Limits. One or more methods of protection used determined by the Planning Committee and approved by Council.
Management Zone Two
An area outside the City Limits to be managed by a Public Education program. Increased protection as required and approved by governing body

Figure 2-1

This figure shows the three management zones delineated for Worthington, The Primary Protection Zone encompasses a 200 foot radius around each well. Management Zone One is defined by the city's boundaries. Management Zone Two is defined by a circle with an arbitrary radius and includes areas outside the city limits.

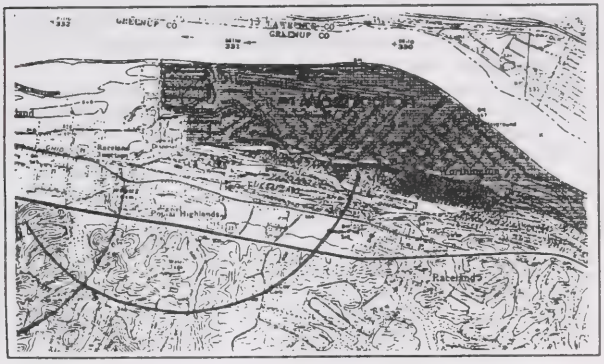


Figure 2-2

This figure shows the overlap between the protection areas of Worthington and Wurtland, a neighboring community.

STEP THREE: Identifying Potential Contamination Sources

Identification of potential sources of contamination in the Wellhead Protection Area (WHPA) began in July, 1991, and was completed in six months.

To compile a list of potential dangers, the planning team drew on a number of resources, including; city employees, railroad employees, health department officials, employees from neighboring communities, and private citizens.

The field survey began before the protection area delineation was complete. The survey area was limited by a city boundary overlap discussed previously.

The planning team identified and mapped the list of potential contaminants seen in ***Figure 2-3***. Several of the potential threats were of immediate concern.

1) Railroad Yard - It is adjacent to and up-gradient of the wells. Various solvents are used and transported within this area.
2) Franz Drive - This unincorporated area of Franz Estates is a residential area with private wells and septic systems within 150 feet of the city's wells. There have been problems with the septic systems in this area.
3) Poplar Highlands - This subdivision up-gradient of the wells is densely populated and contains private wells, septic systems, and repair shops.
4) Highway 23 - This road is heavily traveled. Potentially hazardous chemicals and substances are transported on this road.
5) Pond Run - This drainage stream flows through several densely populated areas up-gradient to the city's wells. It may also be part of the recharge system for the aquifer.

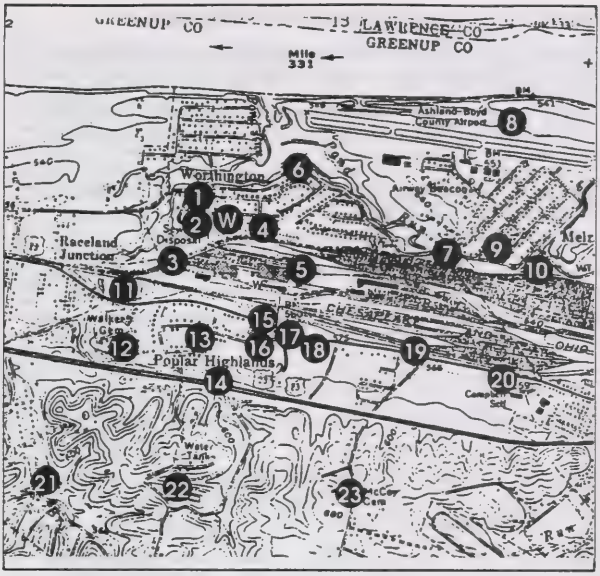


Figure 2-3

This Figure maps out the potential contaminants list for the city of Worthington.

1. Private Wells (Franz Drive)
2. Septic Systems (Franz Drive)
3. CSX Sewage Disposal Plant
4. Sewage Lift Station
5. Railroad Yard and Repair Shops
6. Underground Storage Tank (Dock)
7. Pond Run (stream)
8. Airport
9. Salvage Yard
10. Sewage Lift Station
11. Trailer Park (wells/septic systems)
12. Cemetery
13. Subdivision (wells/septic systems)
14. Highway 23
15. Private Garage
16. Private Garage
17. Garage
18. Electric Substation
19. Old Highway 23
20. Warehouse
21. Chinns Branch (stream)
22. Dairy Farm
23. Cemetery
W. The Well Field

STEP FOUR: Managing the Wellhead Protection Area

The planning team began the process of developing a management strategy in January, 1992. The process took three months.

They reviewed a number of management options, including; City Ordinances, County Ordinances, Public Education Programs, Land Purchase, and Annexation.

During the review process, EPA educational literature, local maps, topographic maps, and input from the city council and city attorney were used to aid in developing a management strategy.

The planning team chose a combination of approaches for their management plan. A city ordinance was chosen to manage the primary management zone and zone one. A public education program was chosen to manage zone two. Annexation was chosen as an approach to applying the city ordinance to critical areas close the wellhead that exist outside of the city limits in zone two.

The city ordinance implemented can be seen in ***Exhibit A*** on subsequent pages.

Part of the public education program used to manage zone two took the form of newspaper articles in local papers. Examples of some of those articles can be seen in ***Exhibit B***.

To implement the management plan, which included annexing areas critically close to the wellhead, the city of Worthington applied for a federal grant. Details of their application can be seen in ***Exhibit C***.

Because of the unique location of the well field, it is necessary for the city of Worthington to expand their sphere of influence to sufficiently protect their water supply. Countywide cooperation, including a county ordinance, was explored and is being pursued with neighboring communities. An immediate strategy for managing the wellhead protection area is in place, but the city of Worthington has a long range plan that includes annexation and the countywide option.

An Ordinance Relating to Wellhead Protection

Exhibit A

Whereas, the City Council of the City of Worthington, Kentucky, deems it appropriate and in the interest of the public health, safety, and welfare of the citizens to adopt regulations to prevent contamination of the groundwater that supplies potable water to the City of Worthington, henceforth, adopts an ordinance that allows for the establishment of separate zones of protection and provides for various protection strategies based upon proximity to the water supply wells.

This Wellhead Protection Ordinance shall become effective immediately upon its second reading and publication.

THE ORDINANCE

WHEREAS, Section 151.110, Kentucky Revised Statutes, recognizes that groundwater is an important but vulnerable natural resource, and that it shall be the policy of the state to manage groundwater for the health, welfare, and economic prosperity of all citizens; and,

WHEREAS, the City Council Members of the City of Worthington, Kentucky recognize that a supply of safe potable water is necessary for the continued well being of the citizens of the City of Worthington; and,

WHEREAS, the City Council Members of the City of Worthington, Kentucky deem it appropriate and in the interest of the public health, safety, and welfare of the citizens to adopt regulations relating to land use and development and to prevent contamination of the groundwater supply that supplies potable water to the citizens of the City of Worthington.

NOW, THEREFORE, BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF WORTHINGTON:

SECTION 100 Short Title

This ordinance shall be known and cited as the Wellhead Protection Ordinance of Worthington.

SECTION 200 Purpose

The purpose of this ordinance is the protection of health, life, resources, and property through the regulation of hazardous substance transport and storage and related aspects of land use and development in the vicinity of any well that supplies potable water to the Worthington water system.

SECTION 300 Definitions

AQUIFER — A geologic formation, group of formations, or part of a formation that contains sufficient saturated, permeable material to yield significant quantities of water to wells and springs.

COMMUNITY WATER SYSTEM — A public water system that serves at least 15 service connections used by year-round residents or regularly serves at least 25 year year-round residents.

FACILITY — A building or buildings, appurtenant structures, and surrounding land used by a single business, private entity, or governmental unit or subunit at a single location or site.

GROUNDWATER — Water in a saturated zone or stratum beneath the surface of land or water, whether or not it is flowing through known and definite channels.

HAZARDOUS SUBSTANCES — Those materials specified in Section 400 of this ordinance.

MANAGEMENT ZONES — A zone or zones established to provide protection to the area surrounding a well or well field from potential contaminant sources. Management options may include limits on certain activities, more stringent design and operating standards, strict monitoring of potential pollution sources, promoting best management practices, and/or implementing education programs. Multiple protection zones may be established for different management strategies based on proximity to the well field.

PETROLEUM PRODUCT — Fuels (gasoline, diesel fuel, kerosene, and mixtures of these products), lubricating oils, motor oils, hydraulic fluids, and other similar products.

POTABLE WATER — Water that is satisfactory for drinking, culinary, and domestic purposes meeting current State and Federal drinking water standards.

PRIMARY CONTAINMENT — The first level of product tight containment, i.e., the inside portion of that container which comes into immediate contact on its inner surface with the hazardous material being contained.

PRIMARY PROTECTION ZONE — An area extending not less than two hundred (200) feet radially from any well supplying potable water to any community water system.

PUBLIC UTILITY — Any utility (gas, water, sewer, electrical, telephone, cable television, etc.) whether publicly owned or privately owned.

SECONDARY CONTAINMENT — The level of product-tight containment external to and separate from the primary containment. Secondary containment shall consist of leak-proof trays under containers, floor curbing or other containment systems and shall be of adequate state -approved size and design to handle all spills, leaks, overflows, specific design and selection of materials shall be sufficient to preclude any substance loss. Containment systems shall be sheltered so that the intrusion of precipitation is effectively prevented.

STORAGE SYSTEM — Any one or combination of tanks, sumps, wet floors, waste treatment facilities, pipes, vaults, or other portable or fixed containers used, or designed to be used for, the storage of hazardous substances at a facility.

WELL — Any excavation that is drilled, cored, bored, washed, driven, dug, jetted, or otherwise constructed when the intended use of such excavation is to conduct groundwater from an aquifer or aquifer system to the surface by pumping or natural flow, or to monitor the characteristics of groundwater within an aquifer system.

SECTION 400 Substances Regulated

The materials regulated by this ordinance shall consist of the following:

1) Petroleum products as defined in Section 300, Definitions.

2) Substances listed in 401 KAR, Chapter 30, and the Federal Hazardous Waste List.

3) Substances other than those listed on the Federal Hazardous Waste List that are determined by state or federal agencies to pose a significant threat to any community water supply well or well field.

Ordinance (continued)

SECTION 500 Restrictions Within the Primary Protection Zone

1) No person shall discharge or cause or permit the discharge of a hazardous substance (including herbicide and pesticide) to the soils, groundwater, or surface water within the Primary Protection Zone. Any person knowing or having evidence of a discharge shall report such information to the appropriate water system personnel.

2) New sanitary landfills are prohibited within the Primary Protection Zone.

3) The use, handling, production, and storage of hazardous substances is prohibited in the Primary Protection Zone except as provided under Section 800.

4) Feedlots or other concentrated animal facilities are prohibited within the Primary Protection Zone.

5) Wastewater treatment plants are prohibited within the Primary Protection Zone.

6) Septic tanks are prohibited within the Primary Protection Zone.

SECTION 600 Establishment of Management Zones

Additional protection beyond the Primary Protection Zone shall be accomplished by the establishment of Management Zones. The first Management Zone shall begin at a point or points not less than two hundred (200) feet radially from any community water supply well and extend outward to a point or points as determined by the Wellhead Protection Area Planning Committee of Worthington.

Subsequent and additional Management Zones may be established whenever it is determined that the wellhead protection area needs to be expanded to provide adequate protection for the groundwater within and/or adjacent to the wellhead protection area.

The Wellhead Protection Area Planning Committee, using acceptable methods, shall determine the size, shape, and location of each Management Zone. The boundaries of each Management Zone shall be proposed and submitted for approval to City Council Members of Worthington.

The boundaries of Management Zone One (1) shall begin at a point or points along the outer perimeter of the Primary Protection Zone and extend outward to all points within and including the City Limit boundaries. Furthermore, as the City Limit boundaries are extended or changed, the Management Zone One (1) boundaries shall be extended or changed in like manner and simultaneously.

The boundaries of Management Zone Two (2) shall include all the area extending between the Primary Protection Zone and/or the Management Zone One (1) outer perimeter and a minimum of one (1) mile radially from any well supplying water to the afore mentioned community water system.

The area within Management Zone Two (2) shall be managed by conducting a public education program to inform the property owners of the need for and methods of wellhead protection. If additional management methods are necessary, the appropriate governing bodies with jurisdiction over the area within the Management Zone Two (2) shall be notified.

SECTION 700 Restriction Within Management Zones

Restriction within each Management Zone shall be determined by a Wellhead Protection Area Planning Committee. The Planning Committee or their appointee shall conduct a survey of the wellhead area and identify the potential sources of contamination therein. After assessing the local groundwater protection needs, the method or combination of management methods shall be submitted for approval.

The restrictions, if any, within each Management Zone may be modified periodically to provide additional protection or to prevent future contamination.

SECTION 800 Exemptions

The following activities or uses are exempt from the provision of this ordinance:

1) The transportation of any hazardous substance through the well field protection area, provided the transporting vehicle is in-transit.

2) The use of herbicides and pesticides is prohibited within the Primary Protection Zone but is allowed within the Management Zones, provided best management practices are used or it is determined that the use of such herbicides and pesticides does not pose a serious threat to the groundwater.

3) The use of any hazardous substance solely as fuel in a vehicle fuel tank or as a lubricant in a vehicle.

4) Fire, police, emergency medical services, emergency management center facilities, or public utility transmission facilities.

5) Retail sales establishments that store and handle hazardous substances for resale in their original unopened containers.

6)Consumer products limited to use a a facility solely for janitorial or minor maintenance purposes.

7)Consumer products located in the home which are used for personal, family, or household purposes.

8) The storage and use of hazardous substances as fuel or lubricant to provide auxiliary power for emergency use to the well field, provided an enclosed secondary containment system is provided for the substance.

9) The use of water treatment chemicals connected with the operation of the well.

SECTION 900 Penalties

Any violation of this ordinance occurring within Management Zone One (1) shall constitute a Class A misdemeanor and be punishable by imprisonment in the County jail for up to 12 months and/or by a fine of up to $500.00 for each separate violation hereof. For any corporation committing any violation of this ordinance within Management Zone One (1) shall be punished by a fine of not more than $10,000 or double the defendant's gain, whichever is greater.

SECTION 1000 Maps & Details Available at City Hall

Complete details of this ordinance as well as maps illustrating the areas referred to herein may be inspected at the Worthington City Building and copies may be obtained at a reasonable charge for copying.

SECTION 100 Conflict and Severability

Conflict with other Ordinances: In case of a conflict between this Ordinance, or any part thereof, and the whole or part of any existing or future ordinances, the provisions of the most restrictive shall apply.

Severability: If any word, clause, phrase, portion, or provision of this Ordinance is held invalid or unconstitutional by any duly authorized court in the State of Kentucky, such a decision shall not affect the remainder or any other provision of this Ordinance

This ordinance shall become effective upon its second reading and publication.

Exhibit B

SECTION TWO

The Times

Wellhead protection essential to protect ground water

Worthington program begun out of concern

Garbage rates to go up

Funding the program is of highest priority

THE DAILY INDEPENDENT — MONDAY, AUGUST 3, 1992

People divided on annexation by Worthington

Sewer woes spur requests

By Amanda Stein
Of The Daily Independent

WORTHINGTON — Residents of a subdivision just outside Worthington are divided on whether to be annexed into the city.

Three of the homeowners in Pratai Estates asked the city council earlier this month to incorporate their homes into Worthington.

They don't mind paying city taxes, they said, if they get city utilities and protection in exchange.

Sonya Moore, of 1 Pratai Drive, said she and her husband, David, have been trying to get annexed into Worthington since they bought their house in 1986.

"We have sewage problems. We've spent a lot of money on pumping in a new septic tank and leach bed," Mrs. Moore said. "All that does us big bucks."

The city is still considering the request from Moore and her neighbors, Sherry and David Sullivan and David and Melanie Brown, but Mayor Ron McCloud said the time might be right for annexation.

Worthington recently applied for a grant for its Wellhead Protection Program, which is designed to help protect the city's three underground wells from contamination.

Septic tanks are one concern outlined in the city's new wellhead protection ordinance.

"Where they start having problems with septic tanks.

SEE PEOPLE, PAGE 12>

Exhibit C

Grant Application for the City of Worthington

Descriptive Title

Development and distribution of Public Information/Educational literature concerning the City's wellhead protection program. Construction of approximately 1,400 line feet of sanitary sewers and water lines to an area adjacent to the city's municipal water well #2 with failing septic systems.

The city of Worthington is located in Greenup County, Kentucky, approximately five miles west of Ashland. The City boundaries are defined by the Ohio River to the North and the CSX railroad yard to the South. The city's domestic drinking water is supplied by three ground water wells.

In conjunction with the Kentucky Rural Water Association, they have enacted a Wellhead Protection Ordinance (Exhibit A), delineated management zones, and identified sources of potential well contamination. These activities have already been completed and represent major goals of the U.S. EPA Wellhead Protection grant program.

This project proposes to further implement the goals by eliminating previously defined sources of source contamination to the city's wells. The city has identified an area along Franz Drive immediately adjacent to the westerly city limits. This area is located outside the city limits and not served by the city water and sewer system.

Many of the homes' private septic systems have failed, and two of the homes are located less than 100 feet from the city's primary well #2. This situation poses a serious potential of contaminating one of the city's primary sources of drinking water.

The City proposes to use the proceeds from this grant to annex this area and provide sanitary collector sewers and municipal water service. This would eliminate the potential of contamination of the city's wells from this area. The remaining proceeds of the grant would be used to prepare engineering plans and to develop and distribute educational material to the area public on the necessity to protect the city's well influence zones.

Item	Quantity	Unit Cost	Total Cost
Sewer			
1. 8" SDR 35 Sewer	1,400 L.F.	$6	$8,400
2.. Manholes	4	$550	$2,200
3. Sewer Wyes	8	$20	$160
4. 4" Sewer Laterals	200 L.F.	$6	$1,200
5. Asphalt	500 S.Y.	$15	$7,500
Water			
1. 6" cl. 200 line	1,400 L.F.	$4.00	$5,600
2. Flush Hydrant	2	$800	$1,600
3. 6" Gate Valves	4	$200	$800
4. Meter Setting	8	$100	$800
5. 3/4 inch service	200 L.F.	$1	$200
6. Tees	2	$50	$100
Total Estimated Materials Cost:			$28,560
Engineering Design Plans, State Approvals			$6,700
City Furnished Labor			$6,300
Public Information Literature			$940
TOTAL PROJECT COST			**$42,500**

STEP FIVE: Developing a Contingency Plan

Development of a contingency plan began in conjunction with implementation of the management plan. Agreements with a neighboring community to provide water are complete. A more detailed contingency plan is part of a "Water Supply Plan" currently being formulated.

In response to the advice of KRWA's groundwater technician, connections have already been made to the City of Raceland Water system, and discussions are being conducted so that connections to the City of Russell can also be accomplished.

CONCLUSION

The City of Worthington was faced with some unique problems in their efforts to develop their Wellhead Protection Plan. Their wells are close to another city's boundaries and to unincorporated areas that pose a threat to their groundwater. The city, with the technical assistance of Clem Wethington of the Kentucky Rural Water Association, pressed forward and completed steps one through four of their plan within seven months. Their groundwater is currently being protected by ordinance and a public information initiative.

They have long range plans and are currently taking action to develop countywide cooperation and to annex areas of concern.

Step five of the plan has been addressed. Connections to the water distribution system of another municipality are completed and negotiations to connect to a second system are ongoing. The city continues to develop its contingency plan.

In a relatively short period of time, and with only minor expenditures, the city of Worthington has developed a workable Wellhead Protection Plan for their community. They have also heightened the water awareness of their community and surrounding communities.

21-953 - 96 - 7

Chapter Four

Case Study:

Village of Cottage Grove, Wisconsin

Description:

The Village of Cottage Grove, located in a region of rolling hills in south central Wisconsin, was once a small farming community. The proximity of the village to Madison, the state capitol, and a new highway have generated a growth spurt in population of 33% from 1989 to 1992. The population is now 1,200, and approximately 800 new dwelling units have been approved for construction.

Cottage Grove relies on groundwater for its water supply, and is situated on a sandstone aquifer at a depth of approximately 725 feet.

Two wells provide the village's water. They are located in the central district of the community. Well #1 is on Main Street. Well #2 is in the middle of a residential development.

Wellhead Protection Issues:

Drums containing hazardous chemicals were discovered at a site that was operated by a chemical company in the 1950s. Liquids from the drums leached into the soil and the site was contaminated.

Two small chemical companies are still located in the village within one mile of the wells.

A serious atrazine contamination problem was also discovered at the site of an agricultural coop in the southern section of the village.

Program Initiation:

Because of the chemical contamination problems already discovered, the village actively pursued a groundwater protection plan and contacted the Wisconsin Rural Water Association (WRWA) for technical assistance in July of 1991.

The village was interested in help with their delineation of a Wellhead Protection Area for their existing wells, and a proposed third well in the northern section of the village.

STEP ONE: Selecting the Planning Team

Jill Jonas, Groundwater Technician for WRWA, responded to Cottage Grove's request for technical assistance. She met with the Village Utility Director, whom she had met the previous month at a state wellhead protection conference.

Ms. Jonas and Utility Director Christine Diebels teamed up to begin the process of delineation. They were uniquely qualified for the task. Ms. Diebels is a trained hydrogeologist.

As they began developing the Wellhead Protection Program, they also sought input from the village's clerk, lawyer, utility board, and area citizens and businesses.

STEP TWO: Delineating the Protection Area

There was a lot of hydrogeological data available from an RCRA study on the 1950's contamination site. Research on the site included extensive information and could be used to help calculate groundwater travel times.

A potentiometric map developed for the U.S. Geological Survey was also available and provided hydrogeological data that included information on an existing groundwater divide.

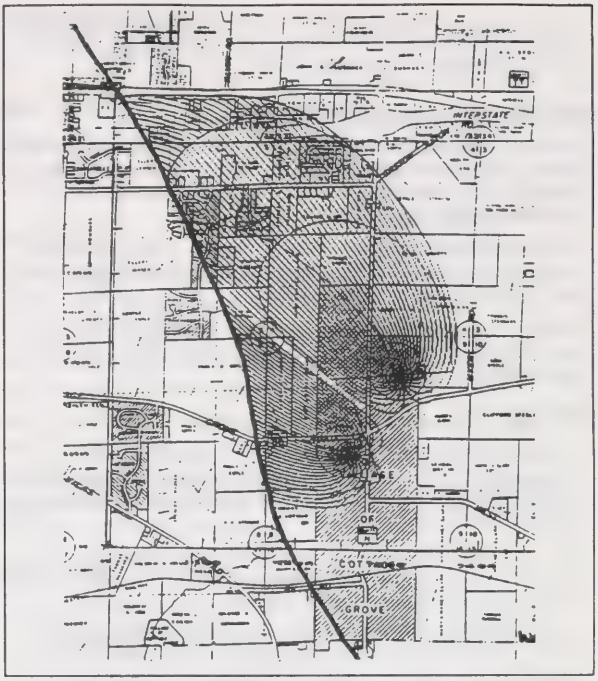
The groundwater technician and utility director used the uniform flow equation to delineate wellhead protection areas (WHPAs) for existing wells #1 and #2, and also for the proposed well #3.

After conferring with geologic and natural history survey personnel, they refined the delineation using the USEPA's computerized WHPA Code analytical model.

At this point the village decided to abandon well #1, and the delineation was completed for wells #2 and #3 using travel times of 1, 5, 50, and 100 years. The results of the delineation process can been seen on the map in ***Figure 4-1***.

Some areas north of the well field and outside of village jurisdiction were included in the WHPA.

Figure 4-1



STEP THREE: Identifying Potential Contamination Sources

Working with the village clerk, and the local Historical Society, the planning team used a contaminant inventory list to identify potential sources of contamination in the community.

They identified 48 potential sources. Only twelve were located in the WHPA.

The list of potential contamination sources included fuel stations and tanks, repair shops, a laundry, a retail lumber yard, and three cemeteries. None of these sources was considered an immediate or major threat to the village's groundwater.

STEP FOUR: Managing the Wellhead Protection Area

The planning team met with the utility board, parks program, and village planning department and drafted a resolution (***Exhibit A***) and an ordinance (***Exhibit B***) to begin protecting the groundwater.

Three public hearings were held on the ordinance between November 1991 and April 1992. On April 20, 1992, the ordinance was adopted to institute land use regulations and restrictions.

The ordinance was developed in accordance with the authority granted by the state legislature in Act 410 of 1983. The act added groundwater protection to the statutory authority of municipal planning bodies.

The ordinance stated that land within the WHPA was subject to land use and development restrictions, with use limited to parks, playgrounds, wildlife areas, non-motorized trails, and municipally sewered residences.

Pre-existing land use outside the limits of the ordinance were required to meet local, state, and federal safety and environmental requirements. And, they were required to develop and file an emergency contingency plan to the village. Any additional land uses in the WHPA were made subject to a permitting process.

The resolution was developed and adopted to involve the county and state governments in the WHPP by requesting their consideration in zoning and permitting land use in the portion of the WHPA not under village jurisdiction.

Public education initiatives are currently under development.

STEP FIVE: Developing a Contingency Plan

The village ordinance addresses the long term future of the groundwater supply. Well #1, still active in July of 1992, will be kept as a test well used to monitor groundwater quality.

The development of a comprehensive contingency plan has been recommended by the groundwater technician, but has not been addressed at this time.

Exhibit A

RESOLUTION NO. 92-03
VILLAGE OF COTTAGE GROVE
DANE COUNTY, WISCONSIN

A RESOLUTION OF THE VILLAGE OF COTTAGE GROVE TO DANE COUNTY, THE TOWN OF COTTAGE GROVE AND TO THE WISCONSIN DEPARTMENT OF NATURAL RESOURCES, REQUESTING THAT WELLHEAD PROTECTION AND GROUNDWATER PROTECTION CONSIDERATIONS BE WEIGHED IN MAKING PERMITS AND ZONING, SUBDIVISION, AND OTHER RELATED LAND USE ORDINANCES, REGULATIONS, OR DECISIONS.

WHEREAS, it is within the responsibility of the Village of Cottage Grove, as a public water supplier, to consider the health, safety, and welfare of its customer; and

WHEREAS, groundwater contamination can and does occur as a consequence of a variety of land use activities; and

WHEREAS, it is desirable to preserve and protect the quantity and quality of our groundwater resources to assure a continued safe, adequate, and usable supply, now and in the future; and

WHEREAS, protection of current and potential future sources of groundwater is worthwhile from the standpoint of resource protection;

NOW, THEREFORE, BE IT RESOLVED by the Village Board of Cottage Grove, that we do respectfully ask that Dane County, the Town of Cottage Grove, and the Wisconsin Department of Natural Resources consider wellhead and groundwater protection in making permits, zoning, subdivision, and other related land use ordinances, regulations, or decisions for areas possibly affecting the wells of the Village of Cottage Grove

ADOPTED this 20th day of April, 1992, by the Village Board of Cottage Grove, by unanimous vote.

Exhibit B

AN ORDINANCE CREATING
CHAPTER 18 OF THE MUNICIPAL CODE
FOR THE VILLAGE OF COTTAGE GROVE

The Village Board for the Village of Cottage Grove, Dane County, Wisconsin, does hereby ordain as follows.

SECTION 1: Chapter 18 of the MUNICIPAL CODE FOR THE VILLAGE OF COTTAGE GROVE is hereby created to read as follows:

SECTION 18.1: CONSTRUCTION OF ORDINANCE

(a) TITLE

This Chapter shall be known, cited and referred to as the "Wellhead Protection Ordinance" (hereafter WHP ORDINANCE)

(b) PURPOSE AND AUTHORITY

1. The residents of the Village of Cottage Grove (hereafter VILLAGE) depend exclusively on groundwater for a safe drinking water supply. Certain land use practices and activities can seriously threaten or degrade groundwater quality. The purpose of the WHP ORDINANCE is to institute land use regulations and restrictions to protect the VILLAGE's municipal water supply and well fields, and to promote the public health, safety and general welfare of the residents of the VILLAGE.

2. These regulations are established pursuant to the authority granted by the Wisconsin Legislature in 1983, Wisconsin Act 410 (effective May 11, 1984, which specifically added groundwater protection to the statutory authorization for municipal planning and zoning in order to protect the public health, safety and welfare.

(c) APPLICABILITY

The regulations specified in the WHP ORDINANCE shall apply within the VILLAGE's corporate limits.

SECTION 18.2: DEFINITIONS

(a) Existing Facilities Which May Cause or Threaten to Cause Environmental Pollution within the corporate limits of the VILLAGE's well fields' recharge areas which include but are not limited to the Wisconsin Department of Natural Resources' draft list of "Inventory of Sites or Facilities Which May Cause or Threaten to Cause Environmental Pollution," "Department of Industry, Labor and Human Relations (hereafter DILHR) list of Underground Storage Tanks (hereafter UST's) and list of facilities with hazardous, solid waste permits, all of which are incorporated herein as if fully set forth.

(b) Groundwater Divide - Ridge in the water table, or potentiometric surface, from which ground water moves away at right angles in both directions. Line of highest hydraulic head in the water table or potentiometric surface

CONTINUED

Exhibit B Continued

(c) Groundwater Protection Overlay District - Shall be defined as that area contained in the map attached and incorporated herein as if fully set forth.

(d) Recharge Area - Area in which water reaches the zone of saturation by surface infiltration and encompasses all areas or features that supply groundwater recharge to a well.

(e) Well Field - A piece of land used primarily for the purpose of supplying a location for construction of wells to supply a municipal water system.

SECTION 18.3: GROUNDWATER PROTECTION OVERLAY DISTRICT (Hereafter DISTRICT)

(a) INTENT> The area to be protected is the Cottage Grove well fields' recharge areas extending to the groundwater divide (as determined by the USGS Water Supply Paper 1779-U, incorporated herein as if fully set forth) contained within the VILLAGE boundary limits. These lands are subject to land use and development restrictions because of their close proximity to the well fields and the corresponding high threat of contamination.

(b) PERMITTED USES. Subject to the exemptions listed in Section 18.4, the following are the only permitted uses within the DISTRICT. Uses not listed are to be considered prohibited uses.

1. Parks, provided there is no on-site waste disposal or fuel storage tank facilities associated within this use.

2. Playgrounds.

3. Wildlife areas.

4. Non-motorized trails, such as biking, skiing, nature and fitness trails.

5. Residential municipally sewered, free of flammable and combustible liquid USTs.

(c) REQUIREMENTS FOR EXISTING FACILITIES

1. facilities shall provide copies of all federal, state and local facility operation approvals or certificate and on-going environmental monitoring results to the VILLAGE.

2. Facilities shall provide additional environmental or safety structures/monitoring as deemed necessary by the VILLAGE, which may include but are not limited to stormwater runoff monitoring.

3. Facilities shall replace equipment or expand in a manner that improves the existing environmental and safety technologies already in existence.

4. Facilities shall have the responsibility of devising and filing with the VILLAGE a contingency plan satisfactory to the VILLAGE for the immediate notification of VILLAGE officials in the event of an emergency.

SECTION 18.4: PERMITTED USES

(a) Individuals and/or Facilities may request the VILLAGE to permit additional land uses in the DISTRICT.

(b) All requests shall be in writing either on or in substantial compliance with forms to be provided by the VILLAGE and shall include an environmental assessment report prepared by a licensed environmental engineer.

(c) The Individual/Facility shall reimburse the VILLAGE for all consultant fees associated with this review at the invoiced amount plus administrative costs.

(d) Any permitted uses shall be conditional and may include required environmental and safety monitoring consistent with local, state and federal requirements, and/or bonds and/or sureties satisfactory to the VILLAGE.

SECTION 18.5: ENFORCEMENT

(a) In the event the individual and/or facility causes the release of any contaminants which endanger the DISTRICT, the activity causing said release shall immediately cease and a cleanup satisfactory to the VILLAGE shall occur.

(b) The individual/facility shall be responsible for all costs of cleanup, VILLAGE consultant fees at the invoice amount plus administrative costs for oversight, review and documentation.

(c) Following any such discharge the VILLAGE may require additional test monitoring and/or bonds/sureties as outline3d in Section 184.4 (d).

(d) Enforcement shall be provided pursuant to Section 25.04 of the Code

SECTION II. CONFLICT AND SEVERABILITY. Section 25.02 of the Municipal Code of the Village of Cottage Grove applies to this ordinance.

Exhibit B (continued)

CONCLUSION

The approach to groundwater protection taken by the village of Cottage Grove was both proactive and reactive. They were reacting to an existing contamination problem, but also proactively protecting their water supply for the future.

The village's utility director estimated that the availability of the Wisconsin Rural Water Association Groundwater Technician made a quality WHPP possible, and saved the community between $25,000 and $30,000 in engineering and consulting fees.

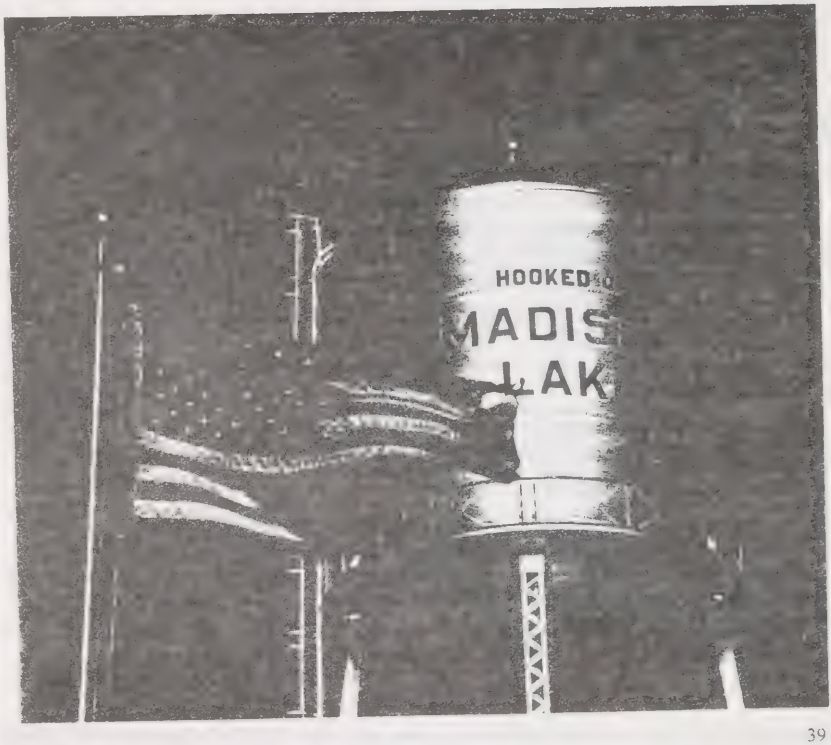
The planning team actively sought input from all sectors of the community, and also state and educational institutions.

Pressure Testing Water Mains
See page 13

Minnesota Rural
Water
"TODAY"

Complimentary Copy

SUMMER 1993



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Water Log is published two times a year by the Ohio Association of Rural Water & Wastewater Systems, P.O. Box 397, Grove City, Ohio 43123. Statements of fact and opinion are made of the responsibility of the authors shown, and do not imply an opinion on the part of the officers, staff, or membership of the Ohio Association of Rural Water & Wastewater Systems.

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December 1994

EPA/NRWA
Ground Water
Wellhead Protection Program

"Testimonials"

A Report by the
National Rural Water Association

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Anthony Grigsby, *Executive Director*

TEXAS NATURAL RESOURCE CONSERVATION COMMISSION

Protecting Texas by Reducing and Preventing Pollution

September 28, 1994

Mr. Tom Duck
Texas Rural Water Association
1616 Rio Grande
Austin, Texas 78701-1173

Re: Texas Rural Water Association
Texas Wellhead Protection Program Participation

Dear Tom:

I wanted to take this opportunity to update you on the status of the Wellhead Protection (WHP) Program. In FY-1994 thirty-five communities received assistance in establishing local WHP programs. Typically, the TNRCC will provide assistance to 20 - 25 communities per fiscal year. Budget and human resource restrictions have historically prevented the agency from substantially increasing this level of implementation. The Texas Rural Water Association's (TRWA) entry into the WHP Program and the efforts of Roger Sanders have directly precipitated a 40% increase in program participation in the last four months of FY-1994 alone.

The program has seen a dramatic increase in participation by rural systems both in areas where the WHP Program has enjoyed success, and in areas where little WHP activity has been noted. TRWA's rapport with its member communities and ability to provide individual assistance has greatly enhanced the WHP Program and has provided their member systems with a valuable, cost-effective tool with which to protect their drinking water.

As the WHP Program continues to expand, we look forward to working together with TRWA to provide continued assistance to local systems.

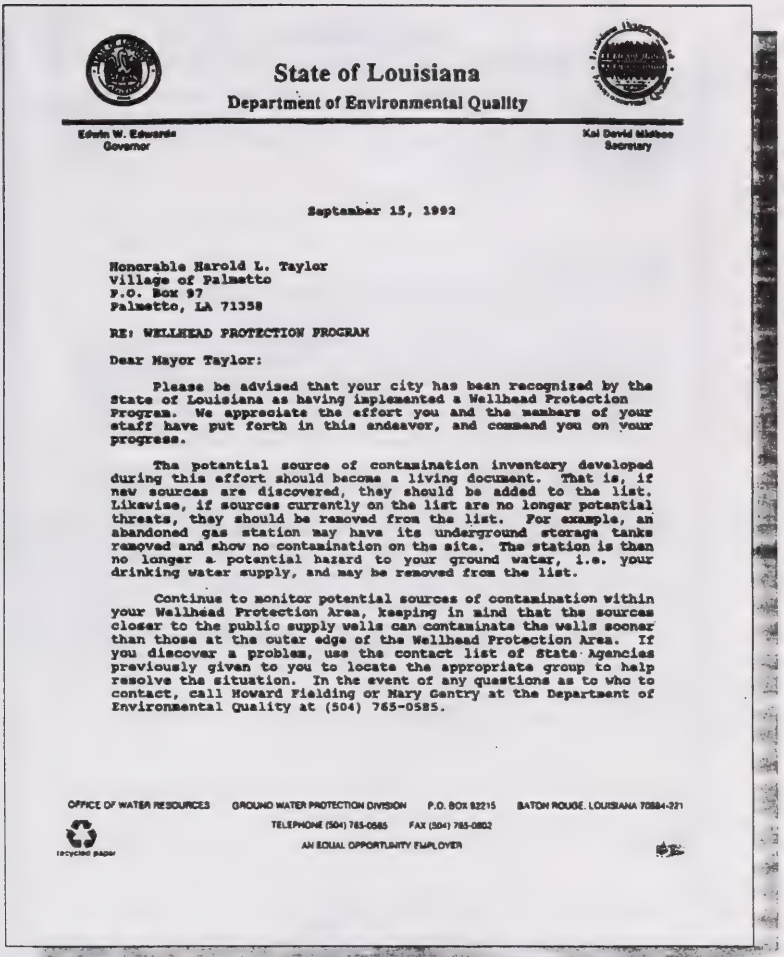
Sincerely,

David P. Terry, M.En.
Environmental Scientist

DPT

cc: Brad Cross, TNRCC

P O Box 13087 • Austin, Texas 78711-3087 • 512/239-1000



State of Louisiana

Department of Environmental Quality

Edwin W. Edwards
Governor

Kai David Midbo
Secretary

September 15, 1992

Honorable Harold L. Taylor
Village of Palmetto
P.O. Box 97
Palmetto, LA 71358

RE: WELLHEAD PROTECTION PROGRAM

Dear Mayor Taylor:

Please be advised that your city has been recognized by the State of Louisiana as having implemented a Wellhead Protection Program. We appreciate the effort you and the members of your staff have put forth in this endeavor, and command you on your progress.

The potential source of contamination inventory developed during this effort should become a living document. That is, if new sources are discovered, they should be added to the list. Likewise, if sources currently on the list are no longer potential threats, they should be removed from the list. For example, an abandoned gas station may have its underground storage tanks removed and show no contamination on the site. The station is then no longer a potential hazard to your ground water, i.e. your drinking water supply, and may be removed from the list.

Continue to monitor potential sources of contamination within your Wellhead Protection Area, keeping in mind that the sources closer to the public supply wells can contaminate the wells sooner than those at the outer edge of the Wellhead Protection Area. If you discover a problem, use the contact list of State Agencies previously given to you to locate the appropriate group to help resolve the situation. In the event of any questions as to who to contact, call Howard Fielding or Mary Gentry at the Department of Environmental Quality at (504) 765-0585.

OFFICE OF WATER RESOURCES GROUND WATER PROTECTION DIVISION P.O. BOX 82215 BATON ROUGE, LOUISIANA 70884-221

TELEPHONE (504) 765-0585 FAX (504) 765-0802

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AN EQUAL OPPORTUNITY EMPLOYER

DEPARTMENT OF
HEALTH AND ENVIRONMENTAL SCIENCES
WATER QUALITY BUREAU

ROOM A-201
1400 BROADWAY

STATE OF MONTANA

PHONE: (406) 444-4849
FAX: (406) 444-1374

PO BOX 200901
HELENA, MONTANA 59620-0901

September 15, 1994

Mike S. Kleinsasser
Kingsbury Colony
Valier, Montana 59486

Dear Mr. Kleinsasser,

Enclosed are the reports completed by Chen Northern on clean up of the gasoline spill that occurred in August, 1991. The reports will be useful in establishing a wellhead protection area. The measurement of ground water elevations establishes the direction of ground water flow. The well logs from the colony's drinking water well and the monitoring wells describe the aquifer material and the overlying soils. The well test reported on the drinking water well log will help determine how fast the water moves in the aquifer.

I am glad to hear that you are considering a wellhead protection area for your well. I believe the assistance that Bill O'Connell of Montana Rural Water Systems can offer is an opportunity for the Kingsbury Colony to complete the project in a cost-effective way. If you have any questions, please call me at 444-5492.

Sincerely,

Carole Mackin

Carole Mackin
Local Water Quality District Program
Water Quality Division

Enclosure
cc: Bill O'Connell

"AN EQUAL OPPORTUNITY EMPLOYER"

January 1995

EPA\NRWA
Rural Community
Training and Technical Assistance

"Occasionally... A Radical Idea Works"

Particularly when the size (57,000 water systems) of the problem overwhelms any conventional approach. The smaller the water system the greater the potential risk to public health and the less likely a system is to receive help. This has the small communities problem since the passage of the federal the Safe Drinking Water Act in 1976. How do small communities comply? Rural water systems proposed a radical solution to Congress - have the local rural water systems provide direct in-the-field help to all rural systems and give the smallest and most vulnerable systems the priority.

A Report by the
National Rural Water Association

EPA\NRWA
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A Report by the
National Rural Water Association

Introduction

The Federal Safe Drinking Water Act (SDWA) is the most expensive and most arbitrary federal mandate that has ever been placed on rural communities. All water systems small and large must follow the same federal requirements regardless of the history and/or previously tested quality of their water. New treatment facilities are required regardless of water quality and numerous costly tests are required regardless if initial testing indicates safe water. New proposals for federal requirements for municipally owned system management, size, and operators have been stopped in the SDWA reauthorization because of the strong backlash caused by this staggering federal regulatory overreach.

Through the thick and thin of these spreading federal "know-it-all" regulations, small and rural systems have relied on their state rural water technical assistance program to help each other try to meet these ever increasing mandates. This program was funded by Congress after rural Members traveled their districts where it was clear that SDWA mandates were causing confusion and massive difficulty across the board.

Congress decided to utilize the federal funding available for construction of small systems and this on-site assistance program to help meet these emerging new requirements. A groundwater protection program was included when the threat of new broad federal land-use mandates were proposed. Despite these efforts, the unquenchable thirst for increased federal control over rural water system operations have finally overburdened funding and technical assistance efforts.

Thankfully this mindless march of federal infringement will probably be stopped. However, many of us want to roll-back the most costly and least logical of these regulations. At a minimum we need to stop new requirements. We also need time and support to utilize the federal funding now available for system facilities and for the on-site technical assistance and groundwater protection programs. If we aren't going to be able to significantly roll-back this law then the programs used to mitigate the damage need to be strongly supported and highlighted. The antidote to the cries for expanded federal regulations is proven and documented on-site assistance. This report contains information on the unique impact and success of the technical assistance programs. It illustrates that local control and grassroots cooperation can improve the supply and quality of rural drinking water more effectively than the use of ever increasing federal regulations.

More Small and Rural Water Systems are assisted each year by this program than all other federal and state programs combined.

Communities that received on-site assistance last year.

Alabama

Abbeville Water & Sewer Board, - 1510 Homes
Addison Water Works, - 750 Homes
Aliceville Water & Sewer Bd., - 1125 Homes
Allgood Water Dept., - 234 Homes
Altoona Water, - 500 Homes
Andalusia Water & Sewer Bd, - 4464 Homes
Ardmore Water Works, - 975 Homes
Ariton Water Works, - 430 Homes
Arley Water Works, - 798 Homes
Asbury Water System, - 850 Homes
Ashford Water & Sewer Board, - 875 Homes
Ashville Water, - 1050 Homes
Atmore Utilities Bd, - 3315 Homes
Attalla Water, - 2725 Homes
Autauga Hill Water Auth., - 544 Homes
Autaugaville, - 406 Homes
Avon Water System, - 130 Homes
Barton Water System, - 495 Homes
Bay S & W Inc., - 907 Homes
Bear Creek Water Works, - 875 Homes
Beatrice Water, - 203 Homes
Beaurgard Water & Fpa, - 1901 Homes
Beaverton Water Dept., - 260 Homes
Belforest Water System, - 550 Homes
Belgreen Water Board, - 130 Homes
Belk Water System, - 225 Homes
Bellwood Water & Fpa, - 110 Homes
Berry Water Works, - 1000 Homes
Bethal Water System, - 917 Homes
Bethany Water Authority, - 280 Homes
Betheham Water Authority, - 378 Homes
Bibb Co. Water Authority, - 600 Homes
Billingsley Water System, - 245 Homes
Black Belt Water System, - 175 Homes
Black Water Works, - 81 Homes
Blantley Water Works, - 425 Homes
Blountville Utility Bd., - 1199 Homes
Boldo Water & Fpa, - 960 Homes
Brantley Water Works, - 425 Homes
Brent Water System, - 1600 Homes Brewton Water & Sewer Bd., - 2918 Homes
Bridgeport Water, - 1400 Homes
Brilliant Water Works, - 475 Homes
Brookside Water Sys., - 1164 Homes
Brundidge Utilities Board, - 1140 Homes
Bryan-burnwell Water Authority, - 423 Homes
Buhl, Elrod & Holman Water Authority, - 60 Homes
Butler County Water Authority, - 32 Homes
Butler Utility Board, - 1416 Homes
Calera Water Works Board, - 2127 Homes
Camden Water & Sewer Dept., - 1266 Homes
Camp Hill Utilities Board, - 605 Homes
Canoe Water & FPA, - 275 Homes
Capps Water, - 200 Homes
Carbon Hill Utilities Board, - 1054 Homes
Carol Creek Water Authority, - 2149 Homes
Carrollton Water & Sewer Board, - 430 Homes
Cedar Bluff Water, - 768 Homes
Centre Water Works & Sewer Board, - 1800 Homes
Centreville Water & Sewer Board, - 971 Homes
Chatom Utilities Board, - 543 Homes
Cherokee Water Dept., - 750 Homes
Childerburg Water & Gas Board, - 2666 Homes
Chilton Water & FPA, - 3800 Homes
Chisholm Hights Water & FPA, - 900 Homes
Choctaw Edna Water & FPA, - 250 Homes
Citizen's Water Service, - 1934 Homes
City of Brent Utilities, - 1600 Homes
City of Centerville Water &Sewer, - 982 Homes
City of Clanton, - 10000 Homes
City of Cullman, - 7500 Homes
City of Daleville, - 2300 Homes
City of Elba, - 2200 Homes
City of Hanceville Water Dept., - 1700 Homes
City of Jackson Water & Sewer, - 2400 Homes
City of Lafayette, - 1364 Homes
City of Weaver Water Dept., - 1900 Homes
Clanton, - 3500 Homes
Clarke County Water System, - 272 Homes
Clay County Water Authority, - 120 Homes
Clayton Water Dept., - 850 Homes
Cleburne Co. Water, - 68 Homes
Cleveland Water Works, - 760 Homes
Clintonville-tabernacle Water Auth., - 275 Homes
Clio Water Dept., - 623 Homes
Coaling Water Authority, - 740 Homes
Coffee Springs Water Sys, - 165 Homes
Coffeeville Water Works Board, - 307 Homes
Coker Water & FPA, - 1083 Homes
Colbert County Water & FPA, - 2430 Homes
Collinsville Water, - 582 Homes
Columbia Water, - 420 Homes
Columbianna Water & Sewer Board, - 1600 Homes

Community Water System, - 329 Homes
Cook Springs Water Authority, - 828 Homes
Cordova Water & Sewer Board, - 1524 Homes
Cottonwood Water System, - 777 Homes
Courtland Water Dept., - 859 Homes
Covington County Water Authority, - 1400 Homes
Cowart Water System, - 525 Homes
Cowikee Water & FPA, - 560 Homes
Crems Water, - 1010 Homes
Crosby Water System, - 100 Homes
Crossville Water, - 560 Homes
Cuba Water Works, - 185 Homes
Cullman Co. Water Dept., - 12000 Homes
Curtis Water & FPA, - 250 Homes
Dadeville Water & Gas Board, - 1175 Homes
Daleville Water System, - 2300 Homes
Dallas County Water, Sewer & FPA, - 2029 Homes
Damascus Water Authority, - 330 Homes
Dauphin Island Water, Sewer, - 1251 Homes
Decatur Utilities, - 17770 Homes
Demopolis Water Works&Sewer Board, - 3000 Homes
Dora Gas & Water Board, - 872 Homes
Doublesprings Water Board, - 1016 Homes
Douglas Water Authority, - 4000 Homes
Dozier Water Works, - 150 Homes
East Brewton Water & Sewer Board, - 1025 Homes
East Cullman Water System, - 2950 Homes
East Lauderdale Water & FPA, - 1762 Homes
East Montgomery Water & Sewer Auth. - 1700 Homes
Edwardville Water, - 135 Homes
Elamville Water Authority, - 300 Homes
Elba Water & Sewer Board, - 2200 Homes
Eldridge Water Authority, - 444 Homes
Electic Water & Sewer Board, - 1050 Homes
Elmont Village Water System, - 104 Homes
Elmore Water & FPA, - 2047 Homes
Englewood-Hulls Water System, - 1022 Homes
Eutaw Water & Sewer, - 1300 Homes
Evergreen Water & Sewer, - 1710 Homes
Excel Water System, - 923 Homes
Fairveiw Water, - 725 Homes
Falkville Water Dept., - 465 Homes
Fayette Water Board, - 2400 Homes
Fayetteville Water Authority, - 805 Homes
Flomaton Water & Sewer Board, - 871 Homes
Florala Water & Sewer Board, - 1150 Homes
Foley Utilities, - 3000 Homes
Ford Valley Water, - 1290 Homes
Forkland Water System, - 392 Homes
Fort Deposit Water & Sewer Board, - 699 Homes
Foster Ralph Water & FPA, - 1250 Homes
Franklin Co. Water Service Authority, - 982 Homes
Franklin Water, - 43 Homes
Franksville Water & FPA, - 230 Homes
Freemanville Water System, - 853 Homes
Friendship Water Works System, - 776 Homes
Frisco City Water Dept., - 850 Homes
Fruithurst Water System, - 120 Homes
Fort Payne Water Works Board, - 5516 Homes
Fulton Utilities Board, - 170 Homes
Gantt Water System, - 200 Homes
Garden City Water Dept., - 295 Homes
Geneva Water & Sewer Board, - 1776 Homes
Georgiana Water Works, - 2900 Homes
Gilbertown Utility Board, - 1500 Homes
Glencoe Water, - 1850 Homes
Glenn Allen Water Works, - 170 Homes
Goodman Water & FPA, - 332 Homes
Goodwater Water & Sewer Board, - 850 Homes
Gordan Water System, - 140 Homes
Gordo Water Gas & Sewer Board, - 1084 Homes
Goshen Water Works, - 155 Homes
Grand Bay Water Works, - 2278 Homes
Green County Water & Sewer Authority, - 379 Homes
Hayneville Water & Sewer Board, - 785 Homes
Headland Water & Sewer Board, - 1450 Homes
Heath Water System, - 160 Homes
Heflin Water Works & Sewer Board, - 11120 Homes
Helena Utilities Board, - 2400 Homes
Henry County Water Authority, - 1432 Homes
High Rock Springs Water System, - 1851 Homes
Hillsboro Water, - 355 Homes
Hoak Bluff, - 1415 Homes
Hodges Water Authority, - 677 Homes
Hollins Water Auth., - 346 Homes
Hollywood Water, - 500 Homes
Holtville Water System, - 1725 Homes
Housing Authority Green County, - 200 Homes
Hurtsboro Water & Sewer Board, - 480 Homes
Husuley Water System, - 1968 Homes
Irondale Water System, - 3100 Homes
Isbell Water System, - 315 Homes
Jack Water System, - 300 Homes
Jackson Gap Water Authority, - 1370 Homes
Jemison Water, - 1144 Homes
Johnson's Crossing Water, - 750 Homes

Joppa Halco & Ryan Water Authority, - 1243 Homes
Kansas Water System, - 125 Homes
Kennedy Water Works, - 260 Homes
Kinsey Water System, - 515 Homes
Kinston Water, - 450 Homes
Kushia Water, - 1425 Homes
Lagrange Mt. Water Authority, - 300 Homes
Lamar County Water, - 1003 Homes
Leeds Water Works Board, - 5000 Homes
Leighton Water Works, - 472 Homes
Lemoyne Water System, - 775 Homes
Level Plains Water System, - 800 Homes
Lexington Water Board, - 735 Homes
Lincoln Water Works, - 1998 Homes
Linden Utility Board, - 1161 Homes
Lineville Water & Sewer Board, - 925 Homes
Little Waxie Water Authority, - 350 Homes
Littleville Water Works, - 1036 Homes
Livingston Water System, - 1355 Homes
Loachapoka Water Sewer & FPA, - 1635 Homes
Lockhart Water Works, - 240 Homes
Logan Water System, - 182 Homes
Louisville Water Works, - 480 Homes
Lowndes County Water & FPA, - 970 Homes
Loxley Water Board, - 1007 Homes
Luverne Water & Sewer Board, - 1100 Homes
Lyeffion Water & FPA, - 350 Homes
Lynn Water Works, - 369 Homes
Macon County Water & FPA, - 1659 Homes
Malvern Water Works, - 335 Homes
Maplesville Water Works & Sewer Board, - 284 Homes
Marbury Water System, - 1400 Homes
Margaret Water Works, - 320 Homes
Marion Co Water, - 150 Homes
Marion Water System, - 1400 Homes
Mcb Water & Fpa, - 187 Homes
Mccall Water System, Inc, - 1020 Homes
Mcintosh Water & FPA, - 771 Homes
Mckenzie Water Works Board, - 381 Homes
Mentone Water Works, - 352 Homes
Mid-Central Water & FPA, - 575 Homes
Midland City Water Works, - 770 Homes
Midway Water Works, - 266 Homes
Millbrook Utility System, - 685 Homes
Millport Water Works, - 539 Homes
Millry Water Works, - 500 Homes
Mithell Water System, - 2500 Homes
Monroeville Water Board, - 2800 Homes
Montevallo Water & Sewer Board, - 2364 Homes
Montgomery North Water, - 580 Homes
Mosses Water/Sewer & FPA, - 450 Homes
Moulton Water Works Board, - 2401 Homes
Moundville Water Works, - 855 Homes
Mt. Andrews Water, - 207 Homes
Mt. High Rock Springs Water & FPA, - 1961 Homes
Mt. Pleasant-BattonX Rd. Water, - 190 Homes
Mt. Vernon Water System, - 700 Homes
Mt. Zion Water Authority, - 95 Homes
Multi-community Water System, - 202 Homes
Munford Water & FPA, - 823 Homes
Myrtlewood, - 288 Homes
N. E. Etowah Water, - 1150 Homes
N.E. Randolph Co. Utilities Board, - 900 Homes
N.W. St. Clair Water System, - 953 Homes
Napier Field Water Works, - 600 Homes
Nauvoo Water System, - 575 Homes
NE Al Water District, - 7043 Homes
NE Etowah County Water Coop, - 1130 Homes
NE Morgan County Water & FPA, - 6000 Homes
Nectar Water Dept., - 465 Homes
New Brockton Water & Sewer Board, - 524 Homes
New Hope Water & Sewer Board, - 1500 Homes
New London Water, Sewer FPA, - 1403 Homes
New Site Water System, - 489 Homes
Newville Water Works, - 261 Homes
North Choctaw County Water, - 720 Homes
North Dallas Water, - 1700 Homes
North Geneva County Water Authority, - 100 Homes
North Jackson Water, - 1725 Homes
North Marshall Water Works Board, - 2184 Homes
Notasulga Water System, - 750 Homes
Nw Blount County Water Authority, - 1257 Homes
Oakman Utilities Board, - 621 Homes
Ohatchee Water System, - 394 Homes
Alabama, - Old Line Water Authority, - 850 Homes
Old Suggsville Water Authority, - 426 Homes
Oneonta Utilities Board, - 4000 Homes
Opp Utilities Board, - 3350 Homes
Orange Beach Water Sewer FPA, - 2303 Homes
Orville Water Works, - 120 Homes
Owassa-Brownville Water & FPA, - 500 Homes
Oyster Bay Water, Sewer FPA, - 355 Homes
Parrish Water Works Board, - 1862 Homes
Pennington Water Dept., - 350 Homes
Perdido Bay Water, Sewer & FPA, - 977 Homes

Perry County Water & Sewer FPA, - 403 Homes
Peterman Water & FPA, - 145 Homes
Peterson Water System, - 515 Homes
Phil Campbell Water Works Board, - 1800 Homes
Picken County Water Authority, - 3000 Homes
Piedmont Gas, Water & Sewer Board, - 2628 Homes
Pike County Water Authority, - 2760 Homes
Pinckard Water Works, - 342 Homes
Pine Bluff Water & FPA, - 988 Homes
Pine Grove Water System, - 740 Homes
Pine Hill Water Dept., - 680 Homes
Pine Level Water, - 784 Homes
Pineapple Water Works, - 138 Homes
Pinkard Water Works, - 342 Homes
Pintlala Water System, - 1286 Homes
Pisgah Water, - 390 Homes
Plantersville Water System, - 175 Homes
Prattville Water Works Board, - 8500 Homes
Providence Water & FPA, - 350 Homes
Quint-Mar Water & FPA, - 2127 Homes
Ragland Water & Gas Board, - 925 Homes
Rainbow City Water, - 2968 Homes
Randolph County Water & FPA, - 435 Homes
Randolph Water System, - 325 Homes
Red Bay Water, - 1761 Homes
Red Level Water Works, - 293 Homes
Reece City Water, - 285 Homes
Reform Water, - 851 Homes
Repton Water, - 185 Homes
Ridge Road Water System, - 250 Homes
Riverfalls Water System, - 289 Homes
Riverside Water System, - 750 Homes
Roanoke Utilities Board, - 2700 Homes
Robertdale Water Works, - 1460 Homes
Rockford Water Works Board, - 498 Homes
Alabama, - Rogerville Water & Sewer Board, - 1240 Homes
Roupes Valley Water Authority, - 264 Homes
Russellville Water &Sewer Board, - 3330 Homes
Rutledge Water Works, - 290 Homes
S E Mobile Co Water Authority, - 550 Homes
Salitpa Water System, - 210 Homes
Samson Water & Sewer Board, - 1096 Homes
Sand Mountain Water, - 1200 Homes
Sardis City Water, - 1168 Homes
Satsuma Water Works, - 1773 Homes
Section-Dutton Water, - 6400 Homes
Sellars Water, - 543 Homes
Selma Water & Sewer Board, - 8468 Homes
Sheffield Utility Dept., - 4000 Homes
Sipsey Water Works Board, - 2200 Homes
Slocomb Water & Sewer Board, - 900 Homes
Snead Water Works, - 1200 Homes
Snowdoun Water System, - 630 Homes
South Alabama Utilities Citronelle, - 1850 Homes
South Bullock County Water Authority, - 2329 Homes
South Crenshaw County Water Authority, - 1015 Homes
South Dallas Water & FPA, - 1200 Homes
South Marengo County Water & FPA, - 786 Homes
Southside Water Board, - 2283 Homes
Southwest Alabama Water & FPA, - 897 Homes
Spanish Fort Water System, - 850 Homes
Spring Creek Water Authority, - 1540 Homes
Springville Water Works, - 950 Homes
St. Elmo-Irvington Water Authority, - 1697 Homes
St. Stephens Water System, - 230 Homes
Stapleton Water, - 329 Homes
Star-Mindingall Water Authority, - 452 Homes
Steele Water Works Board, - 500 Homes
Stewartville Water Authority, - 1093 Homes
Stockton Water System, - 403 Homes
Stevenson Water, - 1100 Homes
Sulligent Water & Sewer Board, - 900 Homes
Sumiton Water Works Board, - 1738 Homes
SW Alabama Water & FPA, - 785 Homes
Swearengin Water System, - 547 Homes
Sweet Water System, - 149 Homes
Sycamore Water Authority, - 487 Homes
Sylacauga Utilities Board, - 7000 Homes
Talladega County Water Dept., - 430 Homes
Tallassee Water & Sewer Dept., - 2428 Homes
Taylor Water System, - 1225 Homes
Alabama, - Thomaston Water Works, - 332 Homes
Thomasville Water & Sewer, - 1966 Homes
Thorsby Water Works, - 900 Homes
Town Creek Water System, - 568 Homes
Town of Castleberry, - 381 Homes
Town of Cleveland Water System, - 765 Homes
Town of Clio Water Dept, - 623 Homes
Town of Elberta, - 319 Homes
Town of Hayden Water Works, - 301 Homes
Town of Hobson City Water Board, - 300 Homes
Town of Hurtsboro, - 485 Homes
Town of Jemison, - 1132 Homes

Town of Kinston Water Works, - 450 Homes
Town of Mulga Water & Gas Dept., - 2300 Homes
Town of Napier Field, - 511 Homes
Town of Newton Water & Sewer Bd, - 550 Homes
Town of Silverhil, - 360 Homes
Town of Summerdale, - 250 Homes
Town of Sweetwater, - 146 Homes
Townley Water Authority, - 740 Homes
Tri-community Water System, - 2200 Homes
Triana Water Works, - 300 Homes
Trinity Water Works, - 575 Homes
Union Grove Utilities Bd., - 776 Homes
Union Springs Utilities Bd., - 1567 Homes
Union Town Utility Board, - 1009 Homes
Upper Bear Creek Water & Sewer, - 3 Homes
Uriah Water System, - 650 Homes
Valley Head Water Works, - 575 Homes
Valley Water Authority, - 670 Homes
Vaw Water System, - 3985 Homes
Vernon Water & Sewer Board, - 1500 Homes
Vina Water Works Board, - 325 Homes
Vincent Water Works Board, - 720 Homes
Wadley Water Works, - 275 Homes
Wagerville Water System, - 163 Homes
Waldo Water & FPA, - 105 Homes
Wallstreet Water Authority, - 1450 Homes
Walnut Grove Water, - 252 Homes
Walnut Hill Water Authority, - 1472 Homes
Walter Water & FPA, - 345 Homes
Waterloo Water System, - 130 Homes
Wattsville Water Authority, - 1222 Homes
Webb Water System, - 432 Homes
West Barbour Water, - 393 Homes
West Blocton Water Works, - 1240 Homes
Alabama, - West Etowah Water, - 1600 Homes
West Jefferson Water Works, - 1100 Homes
West Lauderdale Water, - 2654 Homes
West Morgan Water Authority, - 6600 Homes
West Walker Water Authority, - 68 Homes
Westover Water & FPA, - 1560 Homes
Wetumpka Water & Sewer Board, - 1875 Homes
White Hall Water System, - 400 Homes
White House Water System, - 863 Homes
Wilcox Co. Water Authority, - 1335 Homes
Wills Cross Road Water System, - 165 Homes
Wilmer Utility Board, - 324 Homes
Wilsonville Water Works, - 631 Homes
Wilton Water Works, - 752 Homes
Winfield Water & Sewer Board, - 2200 Homes
Wolf Creek Water & FPA, - 220 Homes
Woodland Water Works, - 240 Homes
York Utilities Board, - 1320 Homes
Homes
Homes
Arkansas, - Airport Road, - 202 Homes
Alicia, - 85 Homes
Allport, - 126 Homes
Almyra, - 135 Homes
Alpena, - 185 Homes
Altheimer, - 650 Homes
Altus, - 481 Homes
Antoine, - 195 Homes
Ark City, - 250 Homes
, - Ark Post, - 10 Homes
Arkadelphia, - 3525 Homes
Ash Flat, - 315 Homes
Ashdown, - 1800 Homes
Augusta, - 1300 Homes
Austin, - 194 Homes
Bald Knob, - 1445 Homes
Bald Knob North Water, - 675 Homes
Banks, - 126 Homes
Barton Lexa, - 1207 Homes
Basin Valley, - 181 Homes
Bassett, - 90 Homes
Batesville, - 4400 Homes
Batts-Lapile, - 232 Homes
Bay, - 800 Homes
Bee Branch, - 750 Homes
Bellefonte, - 154 Homes
Arkansas, - Ben Lomond, - 67 Homes
Berryville, - 1563 Homes
Bethesda, - 345 Homes
Black Rock, - 340 Homes
Blanchard Springs, - 1 Homes
Bois'darc, - 180 Homes
Bono, - 512 Homes
Bradford, - 444 Homes
Breckenridge Union, - 630 Homes
Brinkley, - 1966 Homes
Brookland, - 540 Homes
Bryant, - 1945 Homes
Buckner, - 180 Homes
Bull Shoals Water, - 758 Homes
Burdette, - 285 Homes
Cabot, - 3320 Homes

Caddo Valley, - 168 Homes
Calion, - 315 Homes
Camden, - 6587 Homes
Camp Robinson, - 1400 Homes
Carthage, - 184 Homes
Casa, - 400 Homes
Cave City, - 720 Homes
Center Grove, - 1004 Homes
Central City, - 325 Homes
Central Clay, - 1900 Homes
Central Water Users, - 842 Homes
Cherokee Village, - 2800 Homes
Chicot Junction, - 254 Homes
Clarendon, - 960 Homes
Clarksville, - 2621 Homes
Cleveland County Rura, - 513 Homes
Coal Hil, - 535 Homes
Colt, - 286 Homes
Community Water System, - 3400 Homes
Compton, - 170 Homes
Conway, - 10000 Homes
Corning, - 1600 Homes
Cotter, - 600 Homes
Cotton Plant, - 525 Homes
Cotton Wood, - 80 Homes
Cottonwood Water, - 180 Homes
Country Water Corp., - 525 Homes
Crawfordsville, - 850 Homes
Cross County Water System, - 3504 Homes
Crossett, - 3300 Homes
Arkansas, - Crowley's Ridge Rural Water, - 1220 Homes
Cushman, - 380 Homes
Damascus, - 215 Homes
Dardanelle, - 1500 Homes
Decatur, - 430 Homes
Delight, - 330 Homes
Del, - 480 Homes
Dennard Water, - 178 Homes
Dermott, - 1650 Homes
Desarc, - 1529 Homes
Devalls Bluff, - 357 Homes
Dewitt, - 1762 Homes
Diamond City, - 425 Homes
Diaz, - 450 Homes
Dota Water Assn., - 600 Homes
Dover, - 506 Homes
Dumas, - 2102 Homes
Dyess, - 170 Homes
East Newton County Water, - 436 Homes
Earle, - 1165 Homes
East End Water Dept., - 1200 Homes
East Johnson County, - 320 Homes
East Prairie, - 282 Homes
Eden Isle Corp., - 370 Homes
Elaine, - 700 Homes
Elkins, - 418 Homes
Emerson, - 375 Homes
Emmett, - 210 Homes
England, - 1310 Homes
Enola-Mt. Vernon, - 510 Homes
Eureka Springs, - 1273 Homes
Evening Shade, - 236 Homes
Felsentha, - 186 Homes
Fisher, - 177 Homes
Flippen, - 759 Homes
Fordyce, - 2110 Homes
Foreman, - 547 Homes
Forestry Service, - 1 Homes
Fountain Hil, - 127 Homes
Four Mile Hil, - 1050 Homes
Fort Hil, - 127 Homes
Fulton County Water, - 400 Homes
Garrett Grove, - 70 Homes
Gassville, - 448 Homes
Gateway, - 375 Homes
Arkansas, - Gentry, - 931 Homes
Gentryville, - 103 Homes
Gillett, - 340 Homes
Glenwood, - 660 Homes
Gosnel, - 1458 Homes
Gould, - 600 Homes
Grady, - 210 Homes
Grand Prairie, - 4050 Homes
Grange-Calamine, - 575 Homes
Gravette, - 815 Homes
Green Forrest, - 1577 Homes
Greenbriar , - 1530 Homes
Greenway, - 214 Homes
Grubbs, - 256 Homes
Gurdon, - 1100 Homes
Guy, - 186 Homes
Haefer-Black Oak, - 200 Homes
Hamburg, - 1268 Homes
Hampton, - 752 Homes
Hardin, - 1461 Homes

Hardy, - 413 Homes
Harmony Grove, - 621 Homes
Harrel, - 137 Homes
Hartman, - 340 Homes
Haske, - 550 Homes
Hazen, - 787 Homes
Heber Springs, - 3500 Homes
Hector, - 340 Homes
Hermitage, - 212 Homes
Hickory Ridge, - 202 Homes
Highland, - 529 Homes
Holly Grove, - 808 Homes
Horatio, - 400 Homes
Horsehead, - 1136 Homes
Horseshoe Bend, - 1280 Homes
Hot Springs County, - 795 Homes
Houston, - 175 Homes
Hoxie, - 1140 Homes
Hughes City, - 750 Homes
Hughes Community Water Assn., - 1010 Homes
Humphrey, - 340 Homes
Huntsville, - 895 Homes
Huttig, - 410 Homes
Hwy 15 Rura, - 1979 Homes
Hwy 71 Water, - 1530 Homes
Imboden, - 315 Homes
Arkansas, - Indian Switch, - 300 Homes
Jasper, - 290 Homes
Joiner, - 399 Homes
Judsonia, - 1048 Homes
Keiser, - 325 Homes
Kelso-Rohwer, - 326 Homes
Kensett, - 814 Homes
Kingsland, - 217 Homes
Knoxville, - 401 Homes
Krooked Kreek, - 450 Homes
Lacey Ladelle, - 428 Homes
Ladd, - 1165 Homes
Lafe, - 650 Homes
Lafe Rura, - 535 Homes
Lake Chicot, - 401 Homes
Lake Village, - 1010 Homes
Lakeview-Midway Water, - 951 Homes
Lakeview-Wabash, - 350 Homes
Lamar, - 487 Homes
Lawrence County, - 1672 Homes
Lawson Urbana, - 387 Homes
LCRWD, - 1659 Homes
Leachville, - 750 Homes
Lead Hil, - 180 Homes
Lee County, - 1716 Homes
Leola, - 276 Homes
Lepanto, - 850 Homes
Leslie, - 265 Homes
Lewisville, - 780 Homes
Lincoln, - 1000 Homes
Little Creek, - 518 Homes
Little River Rura, - 527 Homes
Locksburg, - 329 Homes
London, - 394 Homes
Lonoke, - 1593 Homes
Ludwig, - 324 Homes
Lurton-Pelsor, - 92 Homes
Luxora, - 515 Homes
Lynn, - 260 Homes
Madison, - 380 Homes
Madison County Rura, - 600 Homes
Magnet-Butterfield, - 558 Homes
Mammoth Springs, - 535 Homes
Manila, - 1327 Homes
Mansfield, - 525 Homes
Marianna, - 2382 Homes
Arkansas, - Marion, - 1699 Homes
Marion County Regiona, - 5 Homes
Marked Tree, - 1100 Homes
Marmaduke, - 525 Homes
Marshal, - 819 Homes
Marvel, - 700 Homes
Maumelle, - 750 Homes
Mayflower, - 2054 Homes
Maynard, - 202 Homes
Mc Crory, - 839 Homes
Mc Rae, - 340 Homes
McCaskil, - 28 Homes
McGehee, - 1838 Homes
McNei, - 316 Homes
Melbourne, - 1250 Homes
Mena, - 2649 Homes
Menifee, - 184 Homes
Midway Water Assn., - 730 Homes
Mineral Springs, - 435 Homes
Mitchellville, - 195 Homes
Mockingbird Hil, - 207 Homes
Monette, - 575 Homes
Monticello, - 3300 Homes
Montrose, - 229 Homes

Morning Star , - 343 Homes
Moro, - 154 Homes
Mountain Home, - 5022 Homes
Mountain Top, - 1491 Homes
Mountain View, - 1759 Homes
Mt. Ida, - 920 Homes
Mt. Olive, - 934 Homes
Mt. Sherman, - 198 Homes
Mulberry, - 854 Homes
Murfreesboro, - 805 Homes
N. Crossett, - 1382 Homes
N.E. Yell County, - 1366 Homes
Nashville Rura, - 454 Homes
Newark, - 593 Homes
Newport, - 2963 Homes
No. Bald Knob, - 600 Homes
No. White County Water, - 811 Homes
Norfork, - 225 Homes
Norphlet, - 435 Homes
North Crossett, - 1382 Homes
North White County, - 811 Homes
Northeast Water, - 1425 Homes
Arkansas , - Northern Ohio, - 310 Homes
Oden, - 126 Homes
Oil Trough, - 117 Homes
Ola, - 440 Homes
Osceola, - 3150 Homes
Ozan, - 38 Homes
Ozark, - 1600 Homes
Palastine, - 746 Homes
Pangburn, - 700 Homes
Paris, - 1770 Homes
Parkdale, - 158 Homes
Parkers Chape, - 680 Homes
Parkin Rura, - 248 Homes
Patterson, - 230 Homes
Payneway, - 117 Homes
Perla Water, - 498 Homes
Perry, - 107 Homes
Perrytown, - 70 Homes
Piggott, - 2075 Homes
Plainview, - 319 Homes
Pleasant Grove, - 305 Homes
Plummerville, - 385 Homes
Pocahontas, - 3069 Homes
Pollard, - 171 Homes
Portia, - 280 Homes
Portland, - 253 Homes
Pottsville, - 692 Homes
Poyen, - 214 Homes
Prairie Grove, - 1041 Homes
Prattsville, - 205 Homes
Quinn, - 260 Homes
Quitman, - 500 Homes
Ravenden, - 226 Homes
Ravenden Springs, - 68 Homes
Rector, - 1100 Homes
Redfield, - 798 Homes
Reed, - 122 Homes
Rison, - 817 Homes
Rock-Moore, - 973 Homes
Rural Water Services, - 2186 Homes
Russel, - 165 Homes
S. Ozark, - 570 Homes
S. Sheridan, - 669 Homes
S.E. White County, - 1600 Homes
S.P.G. Water Assn., - 195 Homes
Salem, - 750 Homes
Arkansas, - Sardis, - 1450 Homes
Sedgwick, - 116 Homes
Selma, - 285 Homes
Shady Park, - 2186 Homes
Shannon Hills, - 600 Homes
Sheridan, - 1335 Homes
Siloam Springs, - 3458 Homes
Smackover, - 1045 Homes
So. West White Co., - 1540 Homes
South Sheridan, - 669 Homes
Southside, - 2500 Homes
Southwest Boone Water, - 639 Homes
Sparkman, - 230 Homes
St. Charles, - 115 Homes
St. Francis, - 407 Homes
Star City, - 930 Homes
Stephens, - 576 Homes
Strawberry, - 365 Homes
Strong, - 415 Homes
Success, - 152 Homes
Summit, - 200 Homes
Swifton, - 435 Homes
Thornburg, - 100 Homes
Thornton, - 253 Homes
Till , - 112 Homes
Tinsman, - 44 Homes
Tollette, - 129 Homes
Town of Roe, - 81 Homes

Tri County, - 875 Homes
Troy Whitaker, - 202 Homes
Trumann, - 1410 Homes
Tuckerman, - 900 Homes
Tumblin Shoals, - 1200 Homes
Turrel, - 346 Homes
Tyronza, - 375 Homes
Ulm, - 95 Homes
Valley Springs, - 780 Homes
Van Buren County Rural Water, - 500 Homes
Vilonia, - 3175 Homes
Viola, - 160 Homes
West Crow Mtn., - 764 Homes
West Saline, - 526 Homes
West Stone Co. Water, - 650 Homes
Wabbaseka, - 185 Homes
Waldenburg, - 106 Homes
Arkansas , - Waldo, - 820 Homes
Waldron, - 1525 Homes
Walker, - 230 Homes
Walkerville, - 160 Homes
Walnut Ridge, - 2312 Homes
Ward, - 1534 Homes
Warren, - 2850 Homes
Washington County Water Authority, - 1435 Homes
Watalula Water, - 265 Homes
Watson, - 168 Homes
Watson Chape, - 1890 Homes
Weiner, - 340 Homes
Wesson-Newel, - 184 Homes
West Bauxite Water, - 156 Homes
West Crow, - 764 Homes
West Saline, - 526 Homes
West Stone County, - 632 Homes
Western Greene County Water Dist., - 781 Homes
Wheatley, - 289 Homes
White Hal, - 1174 Homes
White River Rura, - 2000 Homes
Wilburn, - 110 Homes
Wildwood, - 488 Homes
Williford, - 42 Homes
Wilmont, - 467 Homes
Wilson, - 427 Homes
Wilton, - 200 Homes
Wimar, - 280 Homes
Winchester, - 128 Homes
Wright-Pastoria, - 420 Homes
Wynn, - 3000 Homes
Yellville, - 655 Homes
York Town, - 1865 Homes

Arizona,
D.W.I.D., - 26 Homes
7 Ranches DWID, - 37 Homes
Adaman Mutual Water Co-op, - 130 Homes
Ajo Domestic WID, - 125 Homes
Ak-Chin Reservation, - 160 Homes
Alpine Water Ser Inc, - 175 Homes
Antelope Water Co., - 53 Homes
Arivaca Coop, - 95 Homes
Arizona Water Co - Sedona, - 4200 Homes
Arlington Farms W.c. Inc, - 23 Homes
Ash Fork Water Service, - 285 Homes
Avra Water Co, - 1500 Homes
Arizona, - Benson, - 1400 Homes
Big Park Water County, - Homes
Black Canyon City DWID, - 574 Homes
Bonita Creek Hoa, - 7 Homes
Bouse Worley Addition Water, - 132 Homes
Bowie WID, - 265 Homes
Bradshaw Water Co, - 32 Homes
Buckeye, - 1550 Homes
Carolanne Drive H.A., - 25 Homes
Cathedral Vista Water Company, - 31 Homes
Chloride Water Co-op, - 165 Homes
Cienega Springs Water Co., - 50 Homes
Clay Springs Water Service, - 101 Homes
Clear Creek Pines #2, - 40 Homes
Clear Creek Pines 4-8, - 84 Homes
Clearwater Utilities Inc, - 240 Homes
Cocopah Tribal Utility, - 200 Homes
Colorado River Indian Tribe, - 1400 Homes
Community Water Co of Gv, - 5600 Homes
Congress W.C., - 500 Homes
Consolidated Water Utilities, - 500 Homes
Cortaro WUA, - 550 Homes
Country Club AC WC, - 86 Homes
Courthouse Butte CWA, - 18 Homes
Cup of Gold, - 17 Homes
Dairyland Water Coop, - 8 Homes
Dateland Public Service Co, - 49 Homes
Del Sur Improvement Dist., - 2232 Homes
Desert Carmel LOA, - 91 Homes
Desert Shadows Comm - Wel, - 17 Homes
Desert Valley Water, - 9 Homes
Detro DWID, - 12000 Homes

Doney Park, - 1800 Homes
Duncan, - 375 Homes
Eager, - 1300 Homes
Eden Water Co., - 100 Homes
Ehrenberg Water Co, - 210 Homes
El Mirage, - 2274 Homes
Elfrida D.W.U., - 180 Homes
Eloy, - 700 Homes
Eloy MW Dept, - 1925 Homes
Enrenberg W.c., - 210 Homes
Florence, - 1000 Homes
Forest Lakes WID, - 800 Homes
Fredonia M W D, - 500 Homes
Arizona, - Germann W.U.A., - 15 Homes
Gila Bend, - 550 Homes
Globe, - 3304 Homes
Golden Valley Imp Dist, - 145 Homes
Goodyear , - 1200 Homes
Graham County Electric Coop, - 819 Homes
Grandview Water Co, - 22 Homes
Green Field Ranchettes, - 18 Homes
Groom Creek , - 209 Homes
Hassayumpa W. Coop, - 15 Homes
Hatch Valley Water Co., - 49 Homes
Hayden, - 340 Homes
Heber DWID, - 250 Homes
Helmet Peak Water Resource Assn., - 206 Homes
High Chaparral Water Coop, - 24 Homes
Highland Pines DWID, - 310 Homes
Holbrook Water Dept, - 1800 Homes
Homeowners Water Assn, - Homes
Hopi Utilities, - 1027 Homes
Huachuca, - 680 Homes
Hulapai TUA, - 290 Homes
Humbolt Water Service, - 180 Homes
Jackson Acres, - 17 Homes
Jerome, - 250 Homes
Joseph City, - 307 Homes
Joshua Hills WID, - 3 Homes
Junipine Comm POA, - 51 Homes
Kachina Village, - 1400 Homes
Katherine Cabin Site, - 34 Homes
Kearney, - 858 Homes
Kelvin-Simmons Coop, - 15 Homes
La Costa WUA, - 15 Homes
Leslie Canyon WUA, - 18 Homes
Mammoth, - 650 Homes
Marana, - 200 Homes
Maricopa DWID, - 235 Homes
Mayer DWID, - 477 Homes
Mesaland W. C. Inc., - 96 Homes
Metropolitan DWID, - 1400 Homes
Misty Mt DWID and Ponderosa DWID, - 1519 Homes

Mobile Comm Council Program Inc, - 0 Homes
Mobile Gardens Dwid, - 35 Homes
Mohawk Water Corp., - 76 Homes
Montezuma Estates, - 13 Homes
Montezuma Heights Water, - 24 Homes
Morristown , - 5 Homes
Arizona, - Mt Tipton Water Co, - 580 Homes
Mt. Lemon Coop. W.C., - 365 Homes
Oak Creek Valley POA, - 85 Homes
Oak Creek W.C. #1, - 500 Homes
Olive Ave HOA, - 20 Homes
Overgard DWID, - 6 Homes
Para Water County, - 30 Homes
Page, - 1920 Homes
Papago Butte DWID, - 111 Homes
Papago Tribal Utility Authority, - 2700 Homes
Park Water Company, - 11 Homes
Parker, - 1048 Homes
Patagonia, - 309 Homes
Payson, - 4400 Homes
Peek a Boo Water, - 30 Homes
Picacho Peak Water Co, - 17 Homes
Pine Valley Water Co, - 112 Homes
Pine Water Assoc, - 42 Homes
Pinedale DWID, - 83 Homes
Pinetop W.C. Facilities Dist, - 988 Homes
Pomerene DWA, - 276 Homes
Ponderosa DWID, - 1519 Homes
Porter Creek I.D., - 79 Homes
Porter Mtn Dwid, - 93 Homes
Pure Water Co, - 120 Homes
Quartzite, - 0 Homes
Queen Valley DWID, - 494 Homes
Queen Water Users Assn, - 20 Homes
Rancho Del Canejo, - 238 Homes
Rancho Rojo WC, - 616 Homes
Red Rock Crossing Mv Inc, - 33 Homes
Rillito Water Users Assn, - 53 Homes
Rim Trail Wid, - 80 Homes
Rincon Mesa Landowners Assn, - 30 Homes
Rio Bravo, - 0 Homes
Rio Verde Utilities, - 413 Homes

Riverside Water Service, - 15 Homes
Saddleback Vistas, - 13 Homes
Safford, - 5700 Homes
Sahuarita Village , - 45 Homes
Samalay NCCA Imp. Assoc, - 51 Homes
San Carlos Utility Uathority, - 1700 Homes
San Luis, - 1888 Homes
San Simon DWID, - 132 Homes
Sasabe Border Water Coop, - 25 Homes
SC Utility Authority, - 1700 Homes
Arizona, - Sedona Shadows MHP, - 56 Homes
Sedona Ventures WC, - 200 Homes
Seven Ranches DWID, - 37 Homes
Shae Water Co, - 18 Homes
Show Low Lake Water Co, - 19 Homes
Showlow Water Dept, - 2000 Homes
Sierrita Mtn W Coop, - 44 Homes
Silverbell I&D District, - 30 Homes
Ski Hi DWID, - 130 Homes
Snowflake Municipal Water, - 2000 Homes
South Mountain Water Co, - 51 Homes
So-Hi DWID, - 139 Homes
Somerton, - 1500 Homes
South Mountain Water Co., - 42 Homes
Spanish Trail W. C., - 200 Homes
Springerville, - 750 Homes
St David Water Asan, - 385 Homes
St Johns, - 1200 Homes
St. David W.A., - 400 Homes
Sun Leisine Utility Co Inc., - 56 Homes
Sun Leisure, - 230 Homes
Sun Valley Farms - 4 Wua, - 84 Homes
Sun Valley Farms 6 Wc, - 100 Homes
Sun Valley Utilities Inc, - 9 Homes
SW1/4 Sec 21 Water Coop, - 24 Homes
Tall Pines Estates W&IA, - 47 Homes
Taylor, - 744 Homes
Thunderbird Farms, - 470 Homes
Timberline Acres WID, - 212 Homes
Tk Water Service, - 32 Homes
Tohono O'odham Utility Authority, - 4285 Homes
Tolleson, - 1100 Homes
Tombstone, - 519 Homes
Tonto Creek Estates HOA, - 53 Homes
Town of Quartzsite, - 0 Homes
Town of Wellton, - 350 Homes
Twin City Water Work, - 500 Homes
Val Verde Inc, - 18 Homes
Valle Verde Del Norte Co-op, - 105 Homes
Valley Pioneer W.C. Inc, - 1649 Homes
Valley View Ewll Inc, - 15 Homes
Valverde, Inc., - 18 Homes
Verde Lakes W Coop, - 516 Homes
Verde Valley Schoo, - 1 Homes
Vermillion Cliffs, - 11 Homes
Walden Meadows C.C., - 80 Homes
Arizona, - Wellowners Assoc, - 17 Homes
Wellton, - 393 Homes
Wenden County WID, - 220 Homes
White Mtn Apache Tribe, - 3600 Homes
White Mtn Summer Homes, - 453 Homes
Whittmann DWID, - 0 Homes
Why Utility Company, - 86 Homes
Wickenburg, - 1451 Homes
Wild Flower Water Coop, - 35 Homes
Willcox, - 1250 Homes
Williams, - 1157 Homes
Willow Lakes POA, - 40 Homes
Willow Mobile H.P., - 52 Homes
Winchester Trails #1, - 40 Homes
Winslow Water Dept, - 3300 Homes
Wll Owners Water Assoc., - 13 Homes
Wonderland Acres DWID, - 151 Homes
Woodruff DWID, - 45 Homes
Yarnell WIA, - 470 Homes
Youngtown, - 1437 Homes
Yucca Water Asan., - 82 Homes
Zion MHP, - 16 Homes
Homes
Homes
California, - Aerial Acres Mutua, - 79 Homes
Allensworth Community Ser Dist, - 82 Homes
Alpine Water County, - 24 Homes
Alpine Water Users Assn, - 909 Homes
Amador County Service Area #1, - 420 Homes
Amador County Water Agency, - 5000 Homes
Amigos, - 15 Homes
Anderson, - 2000 Homes
Antioch, - 3000 Homes
Aplaugh Irrigation Dist, - 350 Homes
Apple Valley Heights CWD, - 220 Homes
Apple Valley, City of, - 11 Homes
Arnold, - 1700 Homes
Artois, - 200 Homes
Arvin Community Service Dist., - 1800 Homes
Aspendale Mutual Water, - 100 Homes

Atascadero, - 3200 Homes
Auburn, - 2000 Homes
Avenal, City of, - 1700 Homes
Avila Beach County Water Dist., - 153 Homes
Baker Csd, - 67 Homes
Banning, - 375 Homes
California, - B H Mutua, - 45 Homes
Barney Water Dist, - 1636 Homes
Bass Lake, - 500 Homes
Bear Valley CSD, - 2050 Homes
Bella Vista, - 2500 Homes
Biggs, City of, - 650 Homes
Bighorn Desert View Water Dist., - 1650 Homes
Biola Community Service Dist, - 226 Homes
Birchim Community Services Dist, - 62 Homes
Bishop, City of, - 1100 Homes
Blackberry, - 25 Homes
Blue Lake, - 1100 Homes
Bluelake Springs Mutual Water, - 1523 Homes
Blythe, City of, - 3000 Homes
Boron CSD, - 710 Homes
Bottomwillow CWD, - 414 Homes
Box Springs Mutual Water, - 900 Homes
Briceland Community Serv Dist, - 26 Homes
Bridgeport Public Utility Dist, - 212 Homes
Brisbane, City of, - 1200 Homes
Brooktrails Community Service Dist, - 1200 Homes
Buckingham, - 375 Homes
Buellton, - 1500 Homes
Butnno Cyn Mutual Water Company, - 75 Homes
Byron-Bethany, - 250 Homes
Cabazon County Water District, - 513 Homes
Calaveras Public Utility District, - 1600 Homes
Camberia Community Service District, - 3250 Homes
Camp Mc Clellan Imp. Assn., - 13 Homes
Campwaterman Mutual Water, - 62 Homes
Cartago Mutua, - 40 Homes
Caruthers CSD, - 550 Homes
Carver Tract Mutua, - 187 Homes
Cascadel Mutual Water, - 90 Homes
Cassel Mutua, - 100 Homes
Cedar Ave Mutua, - 126 Homes
Cedar Pines Park Mutua, - 730 Homes
Cedar Valley Mutua, - 60 Homes
Centerville, - 275 Homes
Centerville Community Serv Dist, - 900 Homes
Central Valley CWD, - 750 Homes
Channel Island Beach CSD, - 1703 Homes
Chester, - 100 Homes
Chester Public Utility District, - 1025 Homes
Chowchilla, City of, - 2250 Homes
Christian Valley, - 275 Homes
California,
City of Angles, City of, - 1140 Homes
City of Bishop, - 1100 Homes
City of California City, - 3350 Homes
City of Tehachapi, - 2400 Homes
City of Westmoreland, - 425 Homes
Clearlake Oaks, - 1700 Homes
Clesrar Creek Comm Service Dist, - 2150 Homes
Cloverdale City, - 1800 Homes
Coachella, City of, - 3011 Homes
Coalinga, City of, - 3100 Homes
Colusa, City of, - 1980 Homes
Corcoran, City of, - 2000 Homes
Cotati, City of, - 2000 Homes
City of Imperia, - 1412 Homes
Crescent City, City of, - 3800 Homes
Crestline Lake Arrowhead Water, - 1000 Homes
Crestline Village CWD, - 4850 Homes
Crestview Mutual Water, - 504 Homes
Crowley Lake Mutua, - 60 Homes
Crows Landing Comm Serv Dist, - 130 Homes
Cuesta La Honda Guild (Water), - 300 Homes
Cutler Public Utility District, - 1030 Homes
Daggett Community Service Dist, - 192 Homes
Darwin Community Service Dist, - 68 Homes
Del Este, - 100 Homes
Del Norte Mutual Water, - 30 Homes
Del Paso Manor CWD, - 1802 Homes
Del Ray Community Service Dist, - 314 Homes
Delhi County Water District, - 1200 Homes
Delta Mutual Water Co, - 113 Homes
Denair Community Service Dist, - 1212 Homes
Desert Lake CSD, - 225 Homes
Devore Water Company, - 433 Homes
Dos Palos, City of, - 1485 Homes
Drytown County Water District, - 55 Homes
Earlimart Public Utility Dist, - 1100 Homes
East Blythe County Water Dist, - 525 Homes
East Niles, - 300 Homes
East Niles Comm Service Dist, - 6500 Homes
East Orange County Water Dist., - 1200 Homes
Eastern Municipal Water Dist, - 9999 Homes
Edgemont Gardens Mutua, - 950 Homes
Edgmont Acres Mutua, - 192 Homes

Edmondson Acres Mutua, - 84 Homes
El Creek CSD, - 90 Homes
El Dorado, - 1000 Homes
California, - El Dorado Mutua, - 220 Homes
El Montie, City of, - 3300 Homes
Elk County Water District, - 81 Homes
Elk Creek, - 90 Homes
Escalon, City of, - 1616 Homes
Esp to Community Service Dist, - 560 Homes
Etna, - 300 Homes
Exiter, City of, - 2410 Homes
Fall River Mills Comm Ser Dist, - 500 Homes
Fallsvale Service Co. (Mutual), - 450 Homes
Farm Mutua, - 500 Homes
Farmersville, City of, - 2600 Homes
Fern Valley County Water Dist, - 1040 Homes
Fillmore, City of, - 2914 Homes
Firebaugh, City of, - 812 Homes
Florin County Water District, - 2240 Homes
Ford MHP, - 45 Homes
Forest Park Mutual Water Co, - 87 Homes
Foresthill Public Utility Dist, - 1500 Homes
Fort Bragg, City of, - 2450 Homes
Fort Jones, - 320 Homes
Fortuna, City of, - 3400 Homes
Fraizer Park Public Util. Dist., - 1300 Homes
Galt, City of, - 3500 Homes
Garden Acres Mutua, - 250 Homes
Georgetown Public Utility Dist, - 3300 Homes
Glenshire, - 1100 Homes
Golden Hills CSD, - 2240 Homes
Golden Valley Municipal Water, - 25 Homes
Grass Valley, - 2300 Homes
Green Valley County Water Dist, - 438 Homes
Green Valley Mutual Water, - 1118 Homes
Greenfield County Water Dist, - 1064 Homes
Gridley, City of, - 2100 Homes
Grizzly Flats Comm. Serv. Dist, - 410 Homes
Guadalupe, City of, - 1500 Homes
Guatay Mutual Water Co, - 36 Homes
Gustine, City of, - 1400 Homes
Healdsburg, City of, - 4292 Homes
Herber Public Utility Dist., - 0 Homes
High Desert Mutua, - 31 Homes
High Desert Water Dist, - 9600 Homes
High Valleys Water District, - 162 Homes
Highway City/Co, City of Fresno, - 500 Homes
Hopland, - 150 Homes
Hornbrook, - 225 Homes
California, - Hughson, City of, - 700 Homes
Humbolt Bay Comm Service Dist, - 6500 Homes
Humbolt Bay Municipa, - 750 Homes
Hydesville County Water Dist, - 400 Homes
Idyllwild County Water District, - 1560 Homes
Improvement Dist #1, - 65 Homes
Indian Creek Mutua, - 215 Homes
Inyokern Community Services District, - 325 Homes
Irish Beach, - 161 Homes
Ivanhoe Public Utility Dist., - 1049 Homes
Jackson, City of, - 1520 Homes
Jacumbia Comm. Services District, - 225 Homes
Jones Valley, - 15 Homes
Jubilee Mutual Water Co, - 172 Homes
Julian Community Services Dist, - 169 Homes
June Lake Public Utility Dist, - 500 Homes
Juniper Riveria Co. Water Dist., - 155 Homes
Keeler Community Services Dist, - 63 Homes
Kerman, City of, - 1300 Homes
Kettleman City Comm. Services Dist, - 303 Homes
Keys Community Services Dist, - 1031 Homes
Kirkwood PVD, - 380 Homes
La Canada Irrigation Dist, - 2860 Homes
La Cumbre Mutua, - 1300 Homes
La Habra County Water Dist., - 1863 Homes
La Honda, - 600 Homes
Laguna Negra Mutua, - 29 Homes
Lake of the Woods Mutua, - 300 Homes
Lamone Public Utility District, - 3000 Homes
Lamont Public Utility Dist., - 3000 Homes
Las Positas Mutua, - 35 Homes
Lassen, - 100 Homes
Lathrop, City of, - 2250 Homes
Laytonville, - 500 Homes
Leavitt Lake, - 275 Homes
Lee Vining Public Utility Dist, - 134 Homes
Lemon Heights Mutua, - 478 Homes
Limda Coiunty Water District, - 2700 Homes
Lincoln, City of, - 2350 Homes
Lindsay Strathmore Irrigation Dist, - 1450 Homes
Lindsay, City of, - 2192 Homes
Live Oak, City of, - 1080 Homes
Livingston, City of, - 1500 Homes
Locke Water, - 200 Homes
Lockford Community Service Dist, - 796 Homes
Loleta Comm Service Dist, - 217 Homes
California, - Lompico Cwd, - 500 Homes

Los Alamos Community Ser. Dist., - 350 Homes
Los Flores Water Co, - 1469 Homes
Lost Hills Utility District, - 200 Homes
Louisiana Pacific, - 50 Homes
Lower Lake, - 1500 Homes
Lucern Valley Mutua, - 55 Homes
Lundy Mutual Water, - 60 Homes
Madera Valley Water Co., - 1600 Homes
Madera, County of SA-3, - 439 Homes
Madison Service District, - 150 Homes
Majestoc Pines Comm Serv Dist, - 674 Homes
Malaga County Water District, - 331 Homes
Mammoth Lakes County Water Dist, - 2900 Homes
Maraposa Public Utility Dist., - 620 Homes
Mariana Ranchos C W D, - 320 Homes
Marygold Mutual Water, - 860 Homes
Maxwel, - 200 Homes
Maywood Mutual Water Co. #1, - 1600 Homes
Maywood Mutual Water Co. #2, - 1900 Homes
Maywood Mutual Water Co. #3, - 2000 Homes
Mc Farland Mutual Water, - 1550 Homes
Mckinleyville, - 2800 Homes
Mckinleyville Comm Ser Dist, - 4780 Homes
Medow Creek Mutua, - 175 Homes
Medow Vista County Water Dist, - 1114 Homes
Memdota, City of, - 305 Homes
Mendota, - 625 Homes
Mettler CWD, - 46 Homes
Mi Wuk Mutual Water, - 715 Homes
Middle Road Mutua, - 46 Homes
Midway City County Water Dist., - 220 Homes
Midway Hights County Water Dist, - 245 Homes
Mil Potrero Mutual Water, - 1890 Homes
Mill Creek Mutua, - 65 Homes
Milview County Water District, - 1339 Homes
Minera, - 170 Homes
Miners Oakes County Water Dist, - 1225 Homes
Minila Community Services District, - 320 Homes
Mission Hills Comm. Services Dist., - 1100 Homes
Mojave PVD, - 699 Homes
Muscoy Mutual Water, - 1500 Homes
Mutual Water Co of Glan Avon, - 940 Homes
Mutual Water Co of West Riverside, - 125 Homes
Navajo Mutual Water Co, - 80 Homes
Needles, City of, - 1800 Homes
California, - Newman, City of, - 2000 Homes
Nice, - 1200 Homes
Nipomo Community Service Dist., - 2200 Homes
Noble Village, - 125 Homes
North Edwards Water Dist., - 300 Homes
North Dos Palos Water Dist, - 42 Homes
North Edwards CWD, - 300 Homes
North Peak Mutua, - 90 Homes
North Shore Mutua, - 32 Homes
Northridge, - 250 Homes
Nuevo Water Co. (Mutual), - 1500 Homes
O'connor Tract Co-op Water, - 250 Homes
Oak Trail Ranch Mutua, - 35 Homes
Oceano Community Service Dist., - 1700 Homes
Olivehurst Public Utility Dist, - 2950 Homes
Orange Park Acres Mutual Water, - 510 Homes
Orchard Dale Water Dist., - 4000 Homes
Orosi Public Utility District, - 1435 Homes
Oroville Wyandotte, - 3000 Homes
P H D Mutual Water Co, - 16 Homes
Pacific, - 25 Homes
Painted Cave Mutua, - 81 Homes
Palm Desert Water & Service Dis, - 1600 Homes
Palm Ranch Irrigation District, - 1450 Homes
Palo Alto Park Mutua, - 665 Homes
Palo Verde County Water Dist., - 159 Homes
Parlier, City of, - 1600 Homes
Paso Robles Beach Water Assoc., - 715 Homes
Patterson, City of, - 2600 Homes
Pine Cove Comm Service District, - 319 Homes
Pine Cove County Water District, - 1050 Homes
Pine Glade Assn., - 62 Homes
Pine Mountain Mutual Water, - 128 Homes
Pine Valley Mutua, - 653 Homes
Pinedale County Water District, - 2400 Homes
Pixley Public Utility District, - 820 Homes
Placerville, - 2000 Homes
Planada Comm. Ser. District, - 844 Homes
Pleasent Valley Mutual Water, - 1328 Homes
Plymoth, City of, - 340 Homes
Point of View Mutua, - 24 Homes
Poplar Community Service Dist, - 479 Homes
Quincy, - 1800 Homes
Ranch Pauma Mutual Water, - 353 Homes
Rancho Estates Mutua, - 80 Homes
Rancho Marcelino Water & Serv, - 80 Homes
California, - Rancho Murieta Comm. Ser. Dist., - 1600 Homes
Rand Community Services Dist, - 306 Homes
Redway Community Serv District, - 575 Homes
Reedley, City of, - 4300 Homes

Riche Canyon Mutua, - 49 Homes
Richgrove Comm Service Dist, - 400 Homes
Rio Del, - 750 Homes
Rio Linda Water District, - 4000 Homes
Rio Vista, City of, - 1402 Homes
Ripley County Service Area #62, - 160 Homes
Ripon, City of, - 3000 Homes
River Pines, - 300 Homes
River View Water Assn, - 68 Homes
Riverdale PUD, - 750 Homes
Rolling Acres Mutual Water, - 11 Homes
Rosemond Community Service Dist, - 3300 Homes
Rosen Creek Mutua, - 40 Homes
Rubio Canyon Land & Water Co., - 3134 Homes
Rush Creek, - 35 Homes
S & T Mutual Water Co, - 178 Homes
Samtoagp Cyn Water Dist., - 752 Homes
San Augustin Mutua, - 11 Homes
San Bernardino CSA 70 J, - 1488 Homes
San Bernardino CSA 70 W-1, - 722 Homes
San Bernardino CSA Zone F, - 90 Homes
San Joaquin, City of, - 658 Homes
San Simeon Acres Comm. Ser. Dist, - 210 Homes
Santa Ana Heights Mutual Water, - 2700 Homes
Santa Ana River Water Co, - 1980 Homes
Santa Anita Mutua, - 14 Homes
Santa Nella County Water Dist, - 450 Homes
Santa Rosa Mutual Water, - 170 Homes
Santa Ynez Conservation Dist., - 2200 Homes
Saunders Meadows Assn, - 57 Homes
Scotts Valley Water District, - 3037 Homes
Seaside, - 2500 Homes
Seeley County Water Dist., - 364 Homes
Senior Canyon Mutual Water, - 235 Homes
Serrano Irrigation Dist, - 2500 Homes
Seymour Mutua, - 32 Homes
Shafter, City of, - 3000 Homes
Shasta Community Service Dist, - 614 Homes
Sheepcreek Mutual Water Co, - 950 Homes
Sierra City, - 70 Homes
Sierra Highland CSD, - 201 Homes
Sierra King Homeowners Assn, - 31 Homes
California, - Sierra Lake CWD, - 600 Homes
Sierra North Mutua, - 40 Homes
Signal Hill. City of, - 2500 Homes
Silver Fork, - 50 Homes
Sisar Mutual Water, - 100 Homes
Sky Acre Mutual Water Co, - 60 Homes
Skyforest Mutual Water Co, - 110 Homes
Skyline County Water District, - 460 Homes
Skyline Park Water & Service Co., - 94 Homes
Smith River Comm Service Dist, - 422 Homes
Snow Crest Mutua, - 117 Homes
Solvang, - 800 Homes
South Clear Creek, - 25 Homes
South Kaweah Mutua, - 110 Homes
Spring Valley Lake, - 2790 Homes
Springville Public Utility Dist, - 382 Homes
Stallion Spring CSD, - 680 Homes
Straberry Lodge Mutua, - 101 Homes
Strathmore Public Utility Dist, - 500 Homes
Strickland Acres Mutua, - 126 Homes
Sugar Pine Mutua, - 340 Homes
Summerland County Water Dist., - 500 Homes
Sunnyside Farm Mutua, - 150 Homes
Susanville, City of, - 483 Homes
Sutter Community Services Dist, - 855 Homes
Sutter County Water Works #1, - 70 Homes
Tehachapi, City of, - 2400 Homes
Tehama, - 185 Homes
Templeton Community Ser. Dist., - 1500 Homes
Terra Bella Irrigation Dist., - 200 Homes
Teviston Community Services Dist., - 110 Homes
Thermalito Irrigation District, - 2275 Homes
Thompson Lake, - 75 Homes
Thunderbird County Water Dist., - 273 Homes
Tipton Community Service Dist., - 469 Homes
Tonyville, - 75 Homes
Trabuco Canyon Water Dist., - 3023 Homes
Tract 180 Mutual Water Co., - 1000 Homes
Tract 349 Mutual Water Co., - 870 Homes
Tradewinds Water Assoc., - 208 Homes
Tranquility Irrigation Dist, - 315 Homes
Trinidad, - 300 Homes
Tulare, County of, - 387 Homes
Tule River Indian Reservation, - 600 Homes
Union Public Utility District, - 1511 Homes
Upper Lake, - 200 Homes
California, - Valley of Enchantment Mutua, - 735 Homes
Valley View Mutual Water, - 1289 Homes
Valley Water Co., - 3400 Homes
Vandemberg Village Comm Services Dist, - 2200 Homes
Ventura River County Water Dist, - 2100 Homes
Victoria Farms Mutua, - 316 Homes

Volcano Comm. Service District, - 52 Homes
Walnut Grove Home Owners Assoc., - 65 Homes
Wasco Public Utility Dist, - 3019 Homes
Weaverville Comm Service Dist, - 1370 Homes
Weott Community Serv District, - 125 Homes
West Side Park Mutua, - 176 Homes
Westborough County Water Dist., - 3500 Homes
Westhaven Comm Service Dist, - 185 Homes
Westwood, - 850 Homes
White Fence Mutual Water Co, - 400 Homes
Williams, - 700 Homes
Willow County Water District, - 1004 Homes
Willow Creek CSD, - 850 Homes
Willowside Terris Water Assn, - 34 Homes
Windsor, City of, - 6000 Homes
Winterhaven, - 212 Homes
Winters. City of, - 1460 Homes
Winton Water & Sanitary Dist, - 2300 Homes
Woodfords Mutual Water, - 19 Homes
Woodlake, City of, - 1400 Homes
Woodstock Prop Owner Assn., - 88 Homes
Woodville PUD, - 350 Homes
Yosemite West Csd, - 120 Homes
Yuima Municipal Water District, - 325 Homes
Homes
Homes
Colorado, - A&B Water, - 50 Homes
Agate, Town of, - 120 Homes
Aguil , - 260 Homes
Akron, - 850 Homes
Alamosa, - 3300 Homes
Alma, - 200 Homes
Antelope Hills Water, - 90 Homes
Antonito, - 425 Homes
Arapahoe, - 40 Homes
Arapahoe W&S, - 1000 Homes
Aristocrat Ranchetts, - 250 Homes
Arkins, - 400 Homes
Arriba, - 120 Homes
Avondale, - 313 Homes
Colorado, - Baca Grande, - 160 Homes
Bailey, - 74 Homes
Basalt, - 850 Homes
Bayfield, - 500 Homes
Bear Creek W&S, - 2500 Homes
Beehive, - 180 Homes
Bennett, - 500 Homes
Bent Fort Water, - 180 Homes
Berkley W&S, - 1200 Homes
Berthoud, - 1000 Homes
Bethune, - 100 Homes
Blanca, - 160 Homes
Bone Mesa, - 138 Homes
Boone, - 95 Homes
Brandon, - 35 Homes
Breckenridge, - 900 Homes
Briggsdale, - 35 Homes
Brighton, - 96 Homes
Bristo, - 65 Homes
Brook Forest, - 250 Homes
Brush, - 1500 Homes
Buena Vista, - 600 Homes
Buffalo Park, - 48 Homes
Buffalo Park Metro, - 300 Homes
Burlington, - 1200 Homes
Byers, - 468 Homes
Calhan, - 475 Homes
Campo, - 115 Homes
Canon City, - 20 Homes
Canon City WTP, - 3000 Homes
Capulin, - 120 Homes
Carbondale, - 500 Homes
Cascade, - 325 Homes
Castle Pines, - 800 Homes
Cedaredge, - 948 Homes
Center, - 800 Homes
Cheraw, - 115 Homes
Cherokee Water, - 3000 Homes
Cherry Creek Valley W&s, - 950 Homes
Cheyenne Wells, - 600 Homes
Chipeta, - 864 Homes
Clear Creek Valley W&S, - 1500 Homes
Clifton Water District, - 2000 Homes
Colbran, - 39 Homes
Colorado City, - 600 Homes
Colorado Springs, - 1600 Homes
Colorado, - Costilla County W&s, - 319 Homes
Craig, - 2000 Homes
Crawford, - 256 Homes
Crawford Mesa, - 176 Homes
Crested Butte, - 450 Homes
Crested Butte South , - 156 Homes
Crook, - 96 Homes
Crowley Co W&S, - 267 Homes
Cucharas WTP, - 250 Homes
Decano, - 980 Homes

Dacona, - 325 Homes
Deer Trai, - 225 Homes
Del Norte, - 700 Homes
Dillon Valley, - 250 Homes
Divide South, - 33 Homes
Dolores, - 400 Homes
Durango, Town of, - 3300 Homes
Eads, - 12 Homes
Eagle, - 625 Homes
East Alamosa, - 100 Homes
East End Water, - 30 Homes
East Rifle Estates, - 49 Homes
Eckley, - 90 Homes
Edgewater, - 1400 Homes
Elbert, - 90 Homes
Elizabeth, - 400 Homes
Ellicott, - 7 Homes
Empire, - 180 Homes
Erie, - 350 Homes
Estes Park, - 500 Homes
Eureka, - 148 Homes
Evergreen, - 3300 Homes
Fairplay, - 350 Homes
Fayette, - 27 Homes
Federal Heights, - 1109 Homes
Flagler, - 365 Homes
Fleming, - 200 Homes
Florence WTP, - 1750 Homes
Forest Lakes, - 250 Homes
Fort Bent Water, - 380 Homes
Fort Lupton, - 2000 Homes
Fort Morgan, - 3900 Homes
Fowler, - 665 Homes
Foxhills Water Assn., - 24 Homes
Fraser, - 450 Homes
Frederick, - 300 Homes
Colorado, - Frisco WTP, - 1000 Homes
Fruitland Mesa, - 150 Homes
Ft. Garland, - 175 Homes
Ft. Lupton, - 425 Homes
Ft. Morgan, - 3200 Homes
Gardner, Town of, - 125 Homes
Genesse Park Water, - 1650 Homes
Genoa, - 84 Homes
Georgetown, - 350 Homes
Gilcrest, - 310 Homes
Glacier View, - 180 Homes
Glendale, - 2500 Homes
Gleneagle Water, - 1200 Homes
Glenwood Springs, - 2200 Homes
Granada, - 245 Homes
Granby, - 400 Homes
Grand Lake WTP, - 650 Homes
Greenwood WA, - 20 Homes
Grover, - 80 Homes
Gunnison, - 1200 Homes
Gypsum, - 841 Homes
Hanover, - 9 Homes
Hartman, - 50 Homes
Hasty, - 90 Homes
Haxtum, - 325 Homes
Hayden, - 535 Homes
Hidden Valley Water, - 50 Homes
Highview W&S, - 826 Homes
Hillrose, - 60 Homes
Hilltop Water, - 180 Homes
Holly, - 465 Homes
Holyoke, - 1000 Homes
Homestead Water, - 100 Homes
Homesteaders Loop, - 22 Homes
Hope Ditch Assn., - 24 Homes
Hot Sulphur Springs, - 225 Homes
Hotchkiss, - 860 Homes
Hudson, - 330 Homes
Huerfano Water Dist., - 49 Homes
Hugo, - 500 Homes
Idaho Springs, - 450 Homes
Idledale, - 170 Homes
Indian Hills, - 305 Homes
Inverness, - 100 Homes
Jamestown, - 106 Homes
Johnstown, - 580 Homes
Colorado, - Julesburg, - 450 Homes
Karva, - 30 Homes
Keensburg, - 263 Homes
Kim, - 60 Homes
Kiowa, - 180 Homes
Kit Carson, - 160 Homes
Kremmling, - 29 Homes
Kremmling WTP, - 400 Homes
KV Homeowners Assn., - 125 Homes
La Jara, - 320 Homes
La Salle, - 700 Homes
Lajunta, - 3900 Homes
Lamar , - 3600 Homes
Las Animas, - 1800 Homes

Lasalle, - 700 Homes
Laveta, - 450 Homes
Laze , - 82 Homes
Leadville, - 35 Homes
Limon, - 840 Homes
Lochbuie, - 494 Homes
Log Lane, - 280 Homes
Longs Peak Water, - 600 Homes
Louviers, - 100 Homes
Lyons, - 350 Homes
Manassa, - 102 Homes
Mancos, - 485 Homes
Manzanola, - 225 Homes
Marble, - 29 Homes
Masadona, - 17 Homes
May Valley, - 525 Homes
Mcclave, - 205 Homes
Mead, - 225 Homes
Meadow Mtn., - 29 Homes
Meeker, - 1000 Homes
Menoken, - 800 Homes
Mesa Antero, - 49 Homes
Milliken, - 416 Homes
Minturn, - 500 Homes
Mode, - 30 Homes
Moffat, - 50 Homes
Monte Vista, - 1200 Homes
Montezuma, - 2000 Homes
Monument, - 450 Homes
Morgan County Water, - 1500 Homes
Morrison, - 165 Homes
Mountain Mutual W&S, - 243 Homes
Colorado, - Mountain View Water, - 120 Homes
Mt. Crested Butte WTP, - 350 Homes
Mt. Werner WTP, - 650 Homes
Navajo Western, - 100 Homes
Nederland, - 500 Homes
New Dale Grand Valley, - 180 Homes
North Holbook Water, - 27 Homes
No Name Creek, - 40 Homes
North Table Mtn W&S, - 3000 Homes
North Washington, - 65 Homes
Northern Colo. Water, - 300 Homes
Nunn, - 325 Homes
Oak Creek Town Hal, - 45 Homes
Oakcreek, - 450 Homes
Olathe, - 535 Homes
Olney Springs, - 180 Homes
Orchard City, - 1300 Homes
Ordway, - 304 Homes
Otis, - 263 Homes
Ouray, - 600 Homes
Ovid, - 175 Homes
Pagosa Fairfield, - 500 Homes
Palmer Lake, - 642 Homes
Panorama P k Mutua, - 42 Homes
Paoli, - 17 Homes
Paonia, - 800 Homes
Parachute, - 325 Homes
Pardale Water, - 15 Homes
Park Center Water, - 900 Homes
Park Water, - 30 Homes
Parkdale, - 15 Homes
Parkville WD, - 2130 Homes
Patterson Valley, - 95 Homes
Peetz, - 90 Homes
Penrose, - 1317 Homes
Piedra Park, - 60 Homes
Pinery W&S, - 2000 Homes
Pinewood Springs, - 300 Homes
Pinnery Water & San, - 2000 Homes
Plainview, - 17 Homes
Plattville, - 625 Homes
Pleasant View W&S, - 1164 Homes
Poncha Springs, - 280 Homes
Pritchett, - 106 Homes
Project 7 WA, - 3000 Homes
Pueblo West, - 1170 Homes
Colorado, - Purdy Mesa, - 80 Homes
Rainbow Trout Spgs Water, - 15 Homes
Rangley , - 800 Homes
Raymer, - 40 Homes
Redcliffe, - 450 Homes
Ridgeway, - 240 Homes
Rifle WTP, - 1800 Homes
Riverside Water, - 24 Homes
Rock Creek Mesa Water, - 375 Homes
Rockvale, - 165 Homes
Rocky Ford WTP, - 2500 Homes
Romeo, - 106 Homes
Round Mountain, - 480 Homes
Sage Water Users, - 36 Homes
Saguache, - 290 Homes
Salida, - 2200 Homes
San Acacio, - 27 Homes
San Luis, - 295 Homes

Sanford, - 250 Homes
Sedalia, - 125 Homes
Sedgwick, - 105 Homes
Seibert, - 175 Homes
Shannon Estates, - 168 Homes
Shaw Heights, - 1555 Homes
Sheridan Lake, - 120 Homes
Silverthorne, - 850 Homes
Silverton, - 389 Homes
Simla, - 250 Homes
South End Water, - 22 Homes
South Swink Water, - 184 Homes
Southend Water, - 22 Homes
Southern Ute WTP, - 200 Homes
Spanish Peaks, - 49 Homes
Spread Eagle, - 15 Homes
Spring Canyon W&S, - 401 Homes
Springfield, - 775 Homes
Steamboat, - 210 Homes
Steamboat Springs, - 1800 Homes
Sterling, - 4000 Homes
Strasburg, - 250 Homes
Stratmoor Hills, - 1600 Homes
Stratton, - 260 Homes
Sugar City, - 245 Homes
Sunset Water Assn., - 24 Homes
Swink, - 250 Homes
Telluride, - 500 Homes
Colorado, - Town of Empire, - 125 Homes
Trailwest, - 75 Homes
Tranquil Acres, - 70 Homes
Trinidad Wtp, - 3000 Homes
Two Buttes, - 38 Homes
Ute Mountain, - 400 Homes
Ute Water, - 1600 Homes
Valley Water, - 180 Homes
Valley WD, - 3000 Homes
Victor WTP, - 160 Homes
Vona, - 55 Homes
Vroman, - 180 Homes
Walden W&S, - 280 Homes
Walsenburg, - 2000 Homes
Walsh, - 425 Homes
Wattenburg, - 96 Homes
Wellington, - 580 Homes
Westcreek, - 65 Homes
Wetmore, - 39 Homes
Wiggens, - 300 Homes
Wiley, - 450 Homes
Woodland Park, - 1400 Homes
Woodland West, - 104 Homes
Woodmen Water, - 600 Homes
Woodmoor W&S, - 1400 Homes
Wray, - 1050 Homes
Yampa, - 170 Homes
Yuma, - 1000 Homes
Homes
Homes
Connecticut/RI,- Aqua Pump, - 150 Homes
Associated Water Service, - 150 Homes
Baltic Town Hall Water & Sewer Dept., - 100 Homes
Baltic WPCA, - 500 Homes
Bantam Village/Suffield, - 214 Homes
Barbra Manner, - 36 Homes
Berlin Water Commision, - 1800 Homes
Birchwood Estates Water Assn, - 228 Homes
Bittersweet Assn, Ct., - 9 Homes
Blue Trail Acres, Durham, - 216 Homes
Brandy Hill Acres, - 50 Homes
Brenda Fallon Lab, - 0 Homes
Bristol Meeting, - 1000 Homes
Brookside Water Co., - 40 Homes
Carefree Homeowners Assn., Lebanon, - 172 Homes
Chadwicks Homeowners Assn., - 292 Homes
Connecticut/RI, - Chaplin Woods Condo, - 20 Homes
Chatham Acres, East Hampton, Ct, - 75 Homes
Cicciro Water Association, - 88 Homes
Colchester Commons, - 224 Homes
Colchester Utilities, - 1300 Homes
Colchester Water Co., - 3500 Homes
Columbia, - 52 Homes
Coventry Water Company, - 150 Homes
Cromwell Fire Dist., - 1857 Homes
Ct Valley Pump Co., - 50 Homes
Ct Water Company, Clinton, Ct, - 1000 Homes
Deep River Water Pollution Control Auth., - 300 Homes
Depot Pump and Supply Inc, - 0 Homes
Dr. Owen Murphy Apts., - 32 Homes
E. Lyme Water Commission, - 2234 Homes
E. Smithfield Water Dept., - 2028 Homes
E. Windsor Housing Authority, - 31 Homes
E. Windsor WPCA, - 2000 Homes
Eastview/Kozley Water Association, - 80 Homes
Ellington Housing Authority, - 18 Homes
Ethel Walker Schoo, - 86 Homes

Exeter, - 5 Homes
Founder School, East Haddam, CT, - 155 Homes
Gales Ferry, - 57 Homes
Glendale Water Assn., Glendale, RI, - 45 Homes
Greenville, - 2228 Homes
Groton Lg. Pt. Assn, - 200 Homes
Hall Memorial Schoo, - 0 Homes
Harrisville Fire Dept., - 743 Homes
Hartford Water Dept., - 320 Homes
Heritage Village Water Co, Southbury, Ct, - 7300 Homes
Highview Water Co, Danbury, - 200 Homes
Hillcrest Fire Dist, Ct., - 43 Homes
Kensignton Fire District, - 2571 Homes
Kingston Water District, - 686 Homes
Lake Grove, Durham, - 126 Homes
Lakeside Water Co., Sandy Hook, Ct, - 444 Homes
Ledyard, - 470 Homes
Ledyard Village Homeowners Assoc., - 46 Homes
Lyme Wood Eld. Housing, Oldlyme, Ct, - 9 Homes
Malard Cove Assn, East Hampton, Ct, - 183 Homes
Maplewood Apts., Mansfield, - 156 Homes
Marlborough Gardens Water Assn., - 120 Homes
Connecticut/RI, - Marlborough Health Center, Marlborough, - 185 Homes
Masantucket Pequat Reservation, - 150 Homes
Masatucket WWTP, - 60 Homes
Matulaitis Nursing Home, - 129 Homes
Middlefield Housing, Rockfall, Ct., - 12 Homes
Middletown, - 100 Homes
Montville, - 372 Homes
N. Tiverton Fire Dist, - 2714 Homes
Naonk Fire District, - 200 Homes
N. Ragansette Water, - 1016 Homes
New Hartford WWCA Co, - 350 Homes
Noank Fire Dept, - 714 Homes
Nod Hill Apts., Haddam, Ct, - 30 Homes
Norfolk WPCA, - 350 Homes
North Sewer Treatment Plant, - 2417 Homes
P&A Memorial Water, - 110 Homes
Pascoag Fire Dept., - 1000 Homes
Pascoag Power and Water Fire District, - 92 Homes
Pinecrest Condo, Tolland, - 107 Homes
Pleasant Acres Water Co., Danbury, - 556 Homes
Ponemah Village, - 9 Homes
Portland Water Co, - 6600 Homes
Post Road Mobile Homes, Kingston, RI, - 37 Homes
Putnam Water Co., - 1976 Homes
Putnam Water Treatment Plant, - 352 Homes
Richmond Water Supply, - 357 Homes
Roaring Brook Board Meeting, - 350 Homes
Rolling Hills Water Assn., - 46 Homes
Rollingwood Condo, Bethe, - 584 Homes
Roseland Terrace Assn., Woodstock, Ct, - 140 Homes

Rouring Brook Trailer Park, - 350 Homes
Rskcon Water Co., Bethe, - 196 Homes
S. Kingston South Shore, - 1857 Homes
S.C.W.A.B Division, - 57 Homes
Salem Manor Condo, Marlborough, - 32 Homes
Salmon Brook Water, - 114 Homes
Salmon Brook Water Dept, - 234 Homes
Shaker Heights Water Co., - 172 Homes
Sharon Sewer/Water, - 368 Homes
Slatersville Public Supply, - 412 Homes
Smithfield Water Dept, - 2228 Homes
Snipsic Village Elderly Housing, - 18 Homes
Somers Elderly Housing - Woodcrest, - 52 Homes
South Coventry WPCA, - 280 Homes
South Kingston South Shore, - 1857 Homes
Sprague Water, - 100 Homes
Connecticut/RI, - Stafford WPCA, - 1150 Homes
Stone Bridge Fire District, - 845 Homes
Tarrifville Fire District, - 572 Homes
Teverton Water Co, - 800 Homes
Tolland Water Co, - 86 Homes
Torrington Water Supply, - 314 Homes
Touisset Point, - 65 Homes
Town of Jamestown, - 1372 Homes
Town of Portland, - 2130 Homes
Town of Smithfield, - 1497 Homes
Trailsend Company, - 9 Homes
Vernon Village, - 400 Homes
Vernon Water Pollution Control Authority, - 9000 Homes
Village Home Owners Assoc - Ledyard, - 50 Homes
Watertown Fire Dept., - 2371 Homes
Willington Ridge Condo's, - 174 Homes
Winsted Water Works, - 2408 Homes
Woodbridge Wtr., Columbia, CT, - 52 Homes
Woodbury Tax District, - 268 Homes
Woodcrest Eld. Housing, - 16 Homes
Woodlake Water Assoc., - 16 Homes
Woodland Homeowners Assn., Coventry, RI, - 30 Homes
Woodland Summit Water Assoc., - 216 Homes

Worthington Fire Dept., - 314 Homes
WPCA S. Coventry, - 280 Homes
Homes
Homes
Delaware,- Arrow Safety, - Homes
Artesian Water Co, - Homes
Bay Colony, - 50 Homes
Bay View, - 50 Homes
Bethany Beach, - 2060 Homes
Blades, - 320 Homes
Blanton Mobile Home P k, - 87 Homes
Bridgeville Water Dept, - 560 Homes
Camden-Wyoming Water Authority, - 1200 Homes
Cheswald, - 21 Homes
Clayton, - 523 Homes
Crestfield WTP, - Homes
Dalton Mobile Home Park, - 87 Homes
Delaware City, - 705 Homes
Delaware State Fairgrounds, - 50 Homes
Delmar , - 943 Homes
Felton, - 244 Homes
Frankford Water Dept, - 250 Homes
Frederica, - 350 Homes
Delaware, - Georgetown Water Department, - 1300 Homes
Greenwood Water Dept, - 265 Homes
Harrington Water Dept, - 980 Homes
Henlopen Acres, - 200 Homes
Holiday Acres, - 46 Homes
J.H. Wilkersons, - 138 Homes
K-4 Management Office, - 110 Homes
Kings Cliff MHP, - 113 Homes
Kings Cliffe TF, - 280 Homes
Laure, - 1160 Homes
Lewes, - 1800 Homes
Lynch Mobile Home Park, - 70 Homes
Magnolia Water Dept, - 354 Homes
Mayors Meeting, - 700 Homes
Middletown Water Dept, - 975 Homes
Milford Water Dept, - 2229 Homes
Millsboro Water Dept, - 1047 Homes
Milton Water Dept, - 707 Homes
Mobile Gardens, - 350 Homes
New Castle Water Dept, - 1804 Homes
Pepper Ridge Trailer Park, - 70 Homes
Primehook Water Co., - 150 Homes
Rehoboth Water Dept, - 2740 Homes
Sand Hill Mobile Home Park, - 60 Homes
Sea Colony, - 100 Homes
Seaford Water Dept, - 1780 Homes
Selbyville Water Dept, - 700 Homes
Shady Park, - 67 Homes
Silverview Farms, - 166 Homes
Smyrna Water Dept, - 1586 Homes
Swan Estates, - 36 Homes
Swan Keys, - 575 Homes
Town of Frederica, - 350 Homes
Townsend Water Dept., - 147 Homes
Twin Cedars, - 110 Homes
Wilmington Suburban Water Co., - Homes
Winterthur, - 100 Homes
Woodland Manor Trailer Park, - 60 Homes
Homes
Homes
Florida, - Advent Christian Village Wtr System, - 130 Homes
Airport Industrial P k Tallahassee, - 10 Homes
Alachua, - 1220 Homes
Alligator Point Water System, - 500 Homes
Altha, - 165 Homes
Anna Maria, - 570 Homes
Florida, - Apalachicola, - 1250 Homes
Arcadia, - 3000 Homes
Archer, - 540 Homes
Argyle Water System, - 260 Homes
Astor Water Association, - 1300 Homes
Atlantic Beach, - 3672 Homes
Auburn Water System, - 2900 Homes
Avon Park, - 6000 Homes
Bagdad-Garcon, - 1100 Homes
Baker, - 580 Homes
Baldwin, - 600 Homes
Belleview, - 2300 Homes
Berrydale Water System, - 634 Homes
Blountstown, - 1350 Homes
Bonifay, - 1330 Homes
Bowling Green, - 800 Homes
Bradenton Beach, - 580 Homes
Branford, - 420 Homes
Bratt-Davisville, - 880 Homes
Bristo, - 530 Homes
Bronson, - 420 Homes
Brooker, - 150 Homes
Brooksville, - 2600 Homes
Bunnel, - 1060 Homes
Bushnel, - 510 Homes

Callahan, - 400 Homes
Calloway, - 4000 Homes
Campbellton, - 110 Homes
Carrabelle, - 625 Homes
Caryville, - 240 Homes
Casey Key Water Assn., - 420 Homes
Cedar Key Water & Sewer Dist., - 780 Homes
Center Hil, - 325 Homes
Central Water Works, - 1000 Homes
Century, - 800 Homes
Charlotte Harbor Water Assn., - 1820 Homes
Chattahoochee, - 1200 Homes
Cherry Lake Utilities, - 247 Homes
Chiefland, - 820 Homes
Chipley, - 1300 Homes
Christian Village, - 154 Homes
City of Chiefland, - 820 Homes
City of Havana, - 1140 Homes
Clermont, - 2000 Homes
Clewiston, - 3000 Homes
Coleman, - 335 Homes
Florida, - Cottage Hil, - 1000 Homes
Cottondale, - 500 Homes
Crescent City, - 940 Homes
Crestview, - 3200 Homes
Cross City, - 1200 Homes
Crystal River, - 1400 Homes
Dade City, - 3870 Homes
Davenport, - 870 Homes
Decca Utilities, Inc., - 2400 Homes
Defuniak Springs, - 2500 Homes
Deneef Village, - 62 Homes
Destin Water Users, - 4100 Homes
Diane Ferguson, - 300 Homes
Dogwood MHP, - 15 Homes
Dundee, - 060 Homes
Dunnellon, - 900 Homes
Eagle Lake, - 920 Homes
East Milton Water System, - 1820 Homes
East Point, - 525 Homes
Eatonville, - 730 Homes
Econfina Water System, - 24 Homes
Edgewater, - 3400 Homes
El Jobean Water Association, - 535 Homes
Esto, - 130 Homes
Eustis, - 4000 Homes
Everglades City, - 320 Homes
Fanning Springs, - 316 Homes
Farm Hil, - 995 Homes
Fellsmere, - 796 Homes
Flagler Beach, - 2000 Homes
Floral City, - 1470 Homes
Fort Meade, - 1400 Homes
Fowler's Bluff Water Assn., - 150 Homes
Frost Proof, - 1200 Homes
Fruitland Park, - 925 Homes
Ft Meade, - 1400 Homes
Ft Pierce Utilities, - 3500 Homes
Gasparilla Island Water Assn., - 920 Homes
Gonzalez, - 1140 Homes
Graceville, - 1100 Homes
Grand Ridge, - 225 Homes
Green Cove Springs, - 1230 Homes
Greensboro, - 300 Homes
Greenville, - 470 Homes
Greenwood, - 240 Homes
Gretna, - 490 Homes
Florida, - Groveland, - 760 Homes
Gulf Co. Waterworks, - 600 Homes
Gulf Power-Pensacola, - 12 Homes
Gulfbreeze, - 2188 Homes
Haines City, - 4000 Homes
Hampton, - 112 Homes
Hastings, - 335 Homes
Havana, - 1140 Homes
Hawthorne, - 624 Homes
High Springs, - 1400 Homes
Hilliard, - 800 Homes
Holiday Gardens (Holiday), - 800 Homes
Holly-Navre Water System, - 2100 Homes
Holmes Beach, - 2500 Homes
Holt Water System, - 305 Homes
Homosassa Special Water District, - 1800 Homes
Horseshoe Beach, - 250 Homes
Howey in the Hills, - 380 Homes
Hudson Water Works, - 2300 Homes
Immokalee Water & Sewer District, - 4860 Homes
Indian Lake Utilities, - 200 Homes
Indian River Plantation (Stuart), - 150 Homes
Interlachen, - 300 Homes
Inverness, - 2300 Homes
Jacksonville Beach, - 7500 Homes
Jacob City, - 60 Homes
Jasper, - 1200 Homes
Jay, - 630 Homes
Jennings, - 300 Homes

Keystone Water Works, - 1700 Homes
Labelle, - 1150 Homes
Lady Lake, - 1200 Homes
Lake Alfred, - 1450 Homes
Lake Beresford Water Association, - 430 Homes
Lake Butler, - 680 Homes
Lake City, - 3100 Homes
Lake Como Water Assn., - 132 Homes
Lake Hamilton, - 625 Homes
Lake Harney Water Assn., - 165 Homes
Lake Helen, - 900 Homes
Lake Mary, - 1650 Homes
Lake Ola Water Assn., - 80 Homes
Lake Panasoffkee Water Assoc., - 1500 Homes
Lake Placid, - 1250 Homes
Lake Wales, - 3000 Homes
Lanark Village Water & Sewer Dist, - 500 Homes
Florida, - Laural Hil, - 471 Homes
Lawtey, - 490 Homes
Lee, - 230 Homes
Lee Cypress Water & Sewer Corp., - 123 Homes
Lighthouse, - 550 Homes
Live Oak, - 2070 Homes
Macclenny, - 1260 Homes
Madison, - 1700 Homes
Malone, - 343 Homes
Manatee Utilities, - 48 Homes
Mascotte, - 700 Homes
Mayo, - 450 Homes
Mcintosh, - 192 Homes
Melrose Water Assn., - 350 Homes
Mexico Beach, - 1500 Homes
Micanopy, - 330 Homes
Midway Water System, - 2400 Homes
Midway-Cannan Water Assn., - 630 Homes
Milligan, - 400 Homes
Minneola, - 700 Homes
Molino, - 1500 Homes
Monticello, - 1200 Homes
Montverde, - 240 Homes
Moore Creek/Mt Carme, - 900 Homes
Moore Haven, - 950 Homes
Mt Dora, - 3200 Homes
Mulberry, - 820 Homes
Mullett Lake Water Assn., - 265 Homes
Newberry, - 800 Homes
Noma, - 80 Homes
Normandy Village Utilities, - 1300 Homes
Northgate Utilities, - 360 Homes
Oak Hil, - 300 Homes
Oakland, - 260 Homes
Ocoee, - 3400 Homes
Okeechobee Beach Water Assn., - 3400 Homes
Oveido, - 6400 Homes
Ozello Water Association, - 1500 Homes
Pace Water System, - 7200 Homes
Pahokee, - 2100 Homes
Palatka, - 3400 Homes
Palmetto, - 3800 Homes
Panaceaarea Water System, - 820 Homes
Parker, - 2000 Homes
Paxton, - 585 Homes
Penney Farms, - 130 Homes
Florida, - Perry, - 3000 Homes
Pierson, - 525 Homes
Point Baker, - 1885 Homes
Ponce Inlet, - 930 Homes
Ponce-de-leon, - 230 Homes
Port Richey, - 1400 Homes
Quincy, - 4000 Homes
RGC Mineral Sands, - 2 Homes
River Park Utilities, - 215 Homes
Rosedale Water Association, - 165 Homes
Saddlebag Lake, - 800 Homes
San Antonio, - 350 Homes
Sand Cliff's Water System-Panama City, - 100 Homes
Sebring, - 6200 Homes
Seminole Woods Water Assn., - 110 Homes
Sneads, - 630 Homes
Sopchoppy, - 1000 Homes
South Bay, - 1500 Homes
South Dunnellon Water Assn., - 180 Homes
South Shore Water Assn., - 1350 Homes
South Walton Utilities, - 3200 Homes
St John's Co Utilities, - 4200 Homes
St Johns Harbor, - 120 Homes
St Marks, - 200 Homes
St. George Island Utility, - 1000 Homes
Starke, - 2000 Homes
Steinhatchee, - 900 Homes
Suwannee Water Association, - 720 Homes
Taft Water Assn., - 1000 Homes
Talquin Water Company, - 190 Homes
Tangerine, - 208 Homes
Tavares, - 2000 Homes

Taylor Beaches Water Company, - 170 Homes
Temple Terrace, - 3000 Homes
Town of Pierson, - 530 Homes
Trenton, - 650 Homes
Umatilla, - 760 Homes
Vernon, - 375 Homes
Wahneta Water System, - 1075 Homes
Waldo, - 470 Homes
Walnut Hil, - 650 Homes
Wauchula, - 1900 Homes
Wausau, - 230 Homes
Webster, - 400 Homes
Wehneta Water System, - 1065 Homes
Welaka, - 555 Homes
Florida, - Wellborn Water System, - 179 Homes
Westville, - 140 Homes
Wewahitchka, - 530 Homes
White Springs, - 335 Homes
Wildwood, - 1200 Homes
Williston, - 1050 Homes
Winter Garden, - 3400 Homes
Yankeetown, - 380 Homes
Zellwood Water Users, - 700 Homes
Zephyrhills, - 2380 Homes
Zolfo Springs, - 470 Homes
Homes
Homes
Georgia, - Abbyville, - 300 Homes
Adrian, - 615 Homes
Airy, - 250 Homes
Alapha, - 812 Homes
Albany, - 6400 Homes
Alcovy Shores, - 150 Homes
Allen Hurst, - 110 Homes
Allentown, - 273 Homes
Alto, - 651 Homes
Andersonville, - 227 Homes
Arnoldsville, - 100 Homes
Athens, - 10000 Homes
Athens-Hill Top MHP, - 50 Homes
Atlanta North Fulton, - 2 Homes
Auburn, - 2200 Homes
Avera, - 215 Homes
Baconton, - 100 Homes
Baldwin, - 1429 Homes
Baldwin Demorest WTP, - 2 Homes
Ball Ground, - 905 Homes
Barnesville, - 1825 Homes
Bartow, - 200 Homes
Bishop, - 200 Homes
Blairsville, - 564 Homes
Blakley, - 5595 Homes
Bland W/S, - 150 Homes
Blue Ridge, - 1800 Homes
Bluffton, - 138 Homes
Blythe, - 200 Homes
Boston, - 1397 Homes
Bostwick, - 307 Homes
Braselton, - 500 Homes
Bremen, - 1700 Homes
Georgia, - Briar Patch, - 115 Homes
Bromville, - 310 Homes
Brooklett, - 500 Homes
Bryon, - 2276 Homes
Buckhead, - 325 Homes
Buena Vista, - 1472 Homes
Buford, - 2800 Homes
Butler, - 1673 Homes
Butler-Beaver Dam MHP, - 40 Homes
Butts Co., - 1400 Homes
Byron, - 2270 Homes
Camack, - 220 Homes
Camilia, - 5124 Homes
Canton, - 3000 Homes
Carlton, - 250 Homes
Carmon Community W/S, - 196 Homes
Carnesville, - 150 Homes
Carnesville - Franklin Co, - 40 Homes
Carnigan, - 80 Homes
Carrol County WSA, - 6600 Homes
Cave Springs, - 950 Homes
Centerville, - 3351 Homes
Champion Timber Company, - 79 Homes
Chatsworth, - 1100 Homes
Cherokee Co., - 9000 Homes
Chickamauga, - 2165 Homes
City of Talbotton, - 1046 Homes
Clark/Madison Co-Bull Sheal MHP, - 130 Homes
Clarkston, - 5381 Homes
Clarksville, - 850 Homes
Claxton, - 1100 Homes
Clayton, - 2150 Homes
Cleveland, - 1151 Homes
Climax, - 290 Homes
Cobb Toen, - 225 Homes
Cochran, - 4483 Homes

Colbert, - 200 Homes
College Park, - 10000 Homes
Collins, - 158 Homes
Colquit, - 765 Homes
Columbia Co., - 10000 Homes
Comer, - 1097 Homes
Commerce, - 2000 Homes
Concord, - 200 Homes
Conyers, - 7339 Homes
Coosa Water Authority, - 800 Homes
Georgia, - Cornelia, - 2000 Homes
Covington, - 3800 Homes
Covington - Newton County, - 6500 Homes
Coweta Co, - 4900 Homes
Crawford, - 350 Homes
Crawfordville, - 577 Homes
Cresent W/S, - 60 Homes
Cumming, - 7000 Homes
Cuthbert, - 3730 Homes
Dahlonega, - 1500 Homes
Dallas, - 2810 Homes
Danielsville, - 318 Homes
Danville, - 300 Homes
Davisboro, - 200 Homes
Dawson, - 5000 Homes
Deepstep, - 150 Homes
Demorest, - 2150 Homes
Deveroux, - 390 Homes
Douglasville/Douglas Co., - 10000 Homes
Dublin, - 6420 Homes
East Point, - 10000 Homes
Eatonton, - 4750 Homes
Edenfield W/S, - 110 Homes
Edison, - 1182 Homes
Elberton, - 1900 Homes
Ellaville, - 1726 Homes
Ellerslie, - 250 Homes
Ellijay, - 1184 Homes
Ellijay Gilmer County, - 10000 Homes
Emerson, - 700 Homes
Enigma, - 611 Homes
Ephesus, - 350 Homes
Eulania, - 115 Homes
Fairburn, - 200 Homes
Fairmont, - 658 Homes
Fargo, - 250 Homes
Faulkville, - 100 Homes
Finnleyson, - 200 Homes
Flovilla, - 602 Homes
Flowery Branch, - 1000 Homes
Folkston, - 975 Homes
Forsyth, - 6000 Homes
Fort Gaines, - 1248 Homes
Fort Valley, - 3200 Homes
Franklin Co., - 6 Homes
Franklin Co. - New System, - 0 Homes
Georgia, - Franklin Springs, - 220 Homes
Ft. Gaines, - 1248 Homes
Gainesville, - 7000 Homes
Gainesville - Learendall CCC, - 1600 Homes
Gay, - 175 Homes
Geneva, - 250 Homes
Georgetown, - 913 Homes
Gibson, - 679 Homes
Gilmer County - Ellijay, - 2300 Homes
Girard, - 100 Homes
Glenwood, - 400 Homes
Gordon, - 2468 Homes
Graham, - 150 Homes
Granite Shoals, - 175 Homes
Grantville, - 1180 Homes
Gray-Oaks MHP, - 80 Homes
Greensboro, - 2875 Homes
Greenville, - 1167 Homes
Greshamville, - 250 Homes
Grovetown, - 3596 Homes
Guyton, - 400 Homes
Hagan, - 787 Homes
Hahira, - 600 Homes
Harlson County, - 4800 Homes
Harris County, - 1250 Homes
Harrison, - 200 Homes
Hartwel, - 1750 Homes
Hawkinsville, - 4553 Homes
Hayes MHP, - 35 Homes
Heard Co WSA, - 1600 Homes
Helen, - 250 Homes
Henry County, - 10000 Homes
Hephzibah, - 1200 Homes
Higgston, - 150 Homes
Hiram, - 534 Homes
Hogansville, - 2976 Homes
Homeland, - 377 Homes
Hoschton, - 642 Homes
Idea, - 160 Homes
Ila, - 200 Homes

Indian Creek, - 200 Homes
Irwington, - 641 Homes
Irwinton, - 246 Homes
Ivey, - 210 Homes
Jackson County, - 1600 Homes
Jackson Water Authority, - 300 Homes
Georgia, - Jackson-Butts County Water Authority, - 3500 Homes
Jakin, - 125 Homes
Jasper, - 1775 Homes
Jefferson, - 2763 Homes
Jefferson County, - 200 Homes
Jeffersonville, - 800 Homes
Jenkinsburg, - 213 Homes
Jesup, - 3455 Homes
Jesup - Overlok Apartments, - 25 Homes
Jones County, - 1500 Homes
Jones County - Barber MHP, - 100 Homes
Jones Island, - 96 Homes
Junction City, - 182 Homes
Junction City - Indian Creek MHP, - 45 Homes
Kensington Water & Sewer, - 1400 Homes
Keysville, - 150 Homes
Kingsland, - 2200 Homes
Kite, - 200 Homes
Lafayette, - 2105 Homes
Laural Ridge W/s, - 175 Homes
Lavonia, - 800 Homes
Leary, - 250 Homes
Lee Avendale Prison, - 1000 Homes
Leesburg, - 1452 Homes
Lenox, - 400 Homes
Lexington, - 265 Homes
Lilly, - 130 Homes
Lincoln County, - 600 Homes
Lincolnton, - 800 Homes
Lockwood W/S, - 150 Homes
Locust Grove, - 480 Homes
Loganville, - 1615 Homes
Lone Oak, - 170 Homes
Louisville, - 1795 Homes
Ludawics, - 700 Homes
Lula, - 1018 Homes
Luthersville, - 741 Homes
Macon-Bibb-Barber MHP, - 150 Homes
Madison Acres, - 90 Homes
Manchester, - 4104 Homes
Manning Town, - 100 Homes
Mansfield, - 341 Homes
Martin, - 342 Homes
Maysville, - 540 Homes
Mccaysville City Hal, - 1700 Homes
McDonough, - 2929 Homes
Georgia, - McIntyre, - 552 Homes
Meader, - 1500 Homes
Meridian, - 100 Homes
Meter, - 3707 Homes
Midville, - 620 Homes
Midway, - 400 Homes
Millen, - 3808 Homes
Mineral Bluff, - 168 Homes
Mitchel, - 150 Homes
Molena, - 150 Homes
Monroe, - 3749 Homes
Montecello, - 2297 Homes
Montezuma, - 4506 Homes
Monticello, - 150 Homes
Montrose, - 117 Homes
Morgan, - 252 Homes
Morgantown, - 120 Homes
Mount Zion, - 300 Homes
Mt. Airy, - 543 Homes
Mt. Vernon, - 1000 Homes
Musella, - 125 Homes
Newborn, - 404 Homes
Newington, - 150 Homes
Newton, - 703 Homes
Newton County, - 4800 Homes
Nicholson Water Assoc., - 560 Homes
Norwood, - 238 Homes
Notla Water Auth, - 2000 Homes
Nottley, - 1200 Homes
Oak Grove, - 250 Homes
Oak Hill W/S, - 140 Homes
Oak Park, - 150 Homes
Oakwood, - 150 Homes
Oconee, - 500 Homes
Odel, - 175 Homes
Odessa, - 300 Homes
Odum, - 388 Homes
Oglethorpe, - 1302 Homes
Oliver, - 242 Homes
Omega, - 911 Homes
Owl Head W/S, - 150 Homes
Oxford, - 1948 Homes
Pace - A Ride Awhile W/S, - 50 Homes

Patterson, - 626 Homes
Pautuski, - 150 Homes
Pembroke, - 700 Homes
Georgia, - Perkins, - 90 Homes
Pine Mountain, - 949 Homes
Pine Valley, - 200 Homes
Pinehurst, - 388 Homes
Pitts Chape, - 190 Homes
Pondorosa, - 100 Homes
Porta, - 300 Homes
Porterdale, - 659 Homes
Preston, - 388 Homes
Pulaski, - 150 Homes
Ray City, - 400 Homes
Rebecca, - 148 Homes
Register, - 150 Homes
Reidsville, - 2469 Homes
Reidsville - Rogers CCI, - 3500 Homes
Reynolds, - 500 Homes
Richland, - 1675 Homes
Richmond Hills, - 1500 Homes
Ringgold, - 1675 Homes
Roberta, - 939 Homes
Rochelle, - 650 Homes
Rockdale County, - 7600 Homes
Roger's Correctional Inst., - 3500 Homes
Royston, - 925 Homes
Rutledge, - 650 Homes
Salem, - 100 Homes
Sandersville, - 2600 Homes
Sardis, - 600 Homes
Savannah ID, - 40 Homes
Screven, - 619 Homes
Senoia, - 956 Homes
Shady Dale-Carson MHP, - 80 Homes
Sharon W/S, - 140 Homes
Sharpburg, - 80 Homes
Shearton Community W/S, - 200 Homes
Shellman, - 1162 Homes
Shellnut, - 500 Homes
Shiloh, - 329 Homes
Shorewood Estates, - 300 Homes
Siloam, - 329 Homes
Sky Valley, - 187 Homes
Smithville, - 804 Homes
Social Circle, - 2555 Homes
Soperton, - 2797 Homes
South Hinesville, - 100 Homes
Sparks, - 600 Homes
Georgia, - Sparta, - 1710 Homes
St. Mary's, - 4500 Homes
St. Simons, - 2000 Homes
Stapelton, - 330 Homes
Statesboro-Nelson MHP, - 25 Homes
Statham, - 1360 Homes
Stillmore, - 200 Homes
Sumner, - 150 Homes
Surrency, - 150 Homes
Sycamore, - 225 Homes
Talbotton County, - 1200 Homes
Tallapoosa, - 1400 Homes
Tallaulah Falls, - 40 Homes
Tarry Town, - 150 Homes
Tate, - 195 Homes
Temple, - 1870 Homes
Thomaston - Lakeview MHP, - 50 Homes
Thompson, - 2600 Homes
Tignal, - 711 Homes
Toccoa, - 5500 Homes
Toomsboro, - 617 Homes
Towns County, - 1100 Homes
Turin, - 189 Homes
Turtle Cove Properties, - 200 Homes
Twins City, - 700 Homes
Unadilla, - 1620 Homes
Uvalda, - 250 Homes
Valdosta, - 10000 Homes
Vennia, - 2508 Homes
Villa Rica, - 2600 Homes
Wadley, - 2479 Homes
Walker Co Water, - 10000 Homes
Walker Community, - 55 Homes
Walker County-Kensington, - 1500 Homes
Walton County, - 4900 Homes
Warfield, - 150 Homes
Warm Springs, - 407 Homes
Warrenton, - 2190 Homes
Warthen, - 210 Homes
Warwick, - 501 Homes
Washington, - 4279 Homes
Waverly Hal, - 769 Homes
Wayne Co, - 160 Homes
Waynesboro, - 2500 Homes
Weeping Willow, - 200 Homes
Weston, - 140 Homes
Georgia, - Whisperpines MHP, - 40 Homes

White, - 542 Homes
White County, - 1100 Homes
White Plains, - 286 Homes
Wigham, - 605 Homes
Willacoochee, - 1230 Homes
Willie Aceas, - 1000 Homes
Winder, - 7700 Homes
Woodbine, - 1200 Homes
Woodbury, - 1429 Homes
Woodland, - 552 Homes
Woodland Hills, - 60 Homes
Wrens, - 2414 Homes
Wrights Ville, - 2331 Homes
Yatesville, - 150 Homes
Young Harris, - 604 Homes
Youngs Island, - 90 Homes
Zebulon, - 1035 Homes
Homes
Homes
Iowa, - Ackley, - 485 Homes
Adair, - 255 Homes
Ade, - 944 Homes
Afton, - 272 Homes
Akron, - 414 Homes
Albia, - 1106 Homes
Alden, - 244 Homes
Algona, - 1719 Homes
Allerton, - 171 Homes
Allison, - 286 Homes
Alta, - 520 Homes
Alton, - 304 Homes
Altoona, - 2055 Homes
Anamosa, - 1457 Homes
Anita, - 205 Homes
Anthon, - 182 Homes
Applington, - 295 Homes
Armstrong, - 293 Homes
Atkins, - 182 Homes
Avoca, - 428 Homes
Ayrshire, - 56 Homes
Bagley, - 87 Homes
Bancroft, - 245 Homes
Batavia, - 149 Homes
Bayard, - 146 Homes
Belle Plaine, - 810 Homes
Iowa, - Bellvue, - 640 Homes
Bloomfield, - 737 Homes
Bode, - 96 Homes
Bonaparte, - 133 Homes
Bondourant, - 453 Homes
Bridgewater, - 60 Homes
Britt, - 609 Homes
Bronson, - 60 Homes
Brooklyn, - 411 Homes
Buffalo, - 359 Homes
Burt, - 164 Homes
Bussey, - 141 Homes
Calumet, - 46 Homes
Cambridge, - 204 Homes
Carlisle, - 926 Homes
Carrol, - 2737 Homes
Carson, - 201 Homes
Cascade, - 518 Homes
Centerville, - 1696 Homes
Central Iowa RW, - 5200 Homes
Chariton, - 1319 Homes
Charter Oak, - 142 Homes
Cherokee, - 1722 Homes
Churdan, - 121 Homes
CIWA, - 4650, - Homes
Clarance, - 287 Homes
Clarinda, - 1458 Homes
Clarion, - 772 Homes
Clay Co Rural Water, - 1650 Homes
Clear Lake, - 2338 Homes
Colfax, - 703 Homes
Collins, - 130 Homes
Colo, - 220 Homes
Columbus Jct, - 462 Homes
Conrad, - 275 Homes
Coon Rapids, - 382 Homes
Corning, - 516 Homes
Correctionville, - 256 Homes
Corydon, - 479 Homes
Cresco, - 1048 Homes
Creston, - 2260 Homes
Crystal Lake, - 76 Homes
Dallas Center, - 415 Homes
Danville, - 265 Homes
Dayton, - 234 Homes
Iowa, - De Soto, - 295 Homes
Decorah, - 2304 Homes
Dedham, - 75 Homes
Defiance, - 89 Homes
Denison, - 1887 Homes
Denver, - 457 Homes

Desoto, - 295 Homes
Dewitt, - 1290 Homes
Diamonhead Lake, - 500 Homes
Donnellson, - 269 Homes
Dunlap, - 357 Homes
Durant, - 443 Homes
Dyersville, - 1056 Homes
Eagle Grove, - 1049 Homes
Earlham, - 331 Homes
Earling, - 133 Homes
Elberon, - 58 Homes
Eldora, - 868 Homes
Eldridge, - 965 Homes
Elkader, - 431 Homes
Ellsworth, - 129 Homes
Elma, - 187 Homes
Emerson, - 136 Homes
Epworth, - 372 Homes
Essex, - 262 Homes
Estherville, - 1920 Homes
Everly, - 202 Homes
Farmington, - 187 Homes
Fenton, - 99 Homes
Floyd, - 103 Homes
Fonda, - 209 Homes
Fontanelle, - 203 Homes
Forest City, - 1266 Homes
Galva, - 114 Homes
Garner, - 833 Homes
Garwin, - 152 Homes
Gilmore City, - 160 Homes
Gladbrook, - 252 Homes
Glenwood, - 1417 Homes
Glidden, - 314 Homes
Goldfield, - 203 Homes
Gowrie, - 294 Homes
Graettinger, - 232 Homes
Grand Junction, - 231 Homes
Granger, - 178 Homes
Gray, - 24 Homes
Iowa, - Greene, - 326 Homes
Greenfield, - 593 Homes
Grimes, - 758 Homes
Grinnel, - 2543 Homes
Griswald, - 300 Homes
Grundy Center, - 712 Homes
Guthrie Center, - 461 Homes
Hamburg, - 357 Homes
Hampton, - 1181 Homes
Hartley, - 466 Homes
Hawarden, - 697 Homes
Holland, - 61 Homes
Holstein, - 414 Homes
Homboldt, - 1268 Homes
Hubbard, - 233 Homes
Hudson, - 582 Homes
Hul, - 493 Homes
Humboldt, - 1268 Homes
Huxley, - 585 Homes
Independance, - 1706 Homes
Iowa Falls, - 1553 Homes
Irwin, - 113 Homes
Janesville, - 235 Homes
Jefferson, - 1226 Homes
Jewel, - 316 Homes
Kalona, - 555 Homes
Keota, - 286 Homes
Keystone, - 162 Homes
Knoxville, - 2352 Homes
Lake Mills, - 612 Homes
Lansong, - 288 Homes
Laure, - 77 Homes
Laurens, - 443 Homes
Lawton, - 138 Homes
Le Grand, - 244 Homes
Le High, - 153 Homes
Leclair, - 781 Homes
Lemars, - 2415 Homes
Lenox, - 372 Homes
Leon, - 585 Homes
Lincoln, - 49 Homes
Lisbon, - 415 Homes
Livermore, - 125 Homes
Logan, - 400 Homes
Lone Tree, - 280 Homes
Lorimore, - 108 Homes
Iowa, - Lovilla, - 162 Homes
Lowden, - 207 Homes
Lyon & Sioux RW, - 1109 Homes
Madrid, - 684 Homes
Mahaska RW, - 1138 Homes
Malcolm, - 128 Homes
Malard, - 103 Homes
Manchester, - 1519 Homes
Manning, - 424 Homes
Manson, - 527 Homes

Mapelton, - 370 Homes
Maquoketa, - 1751 Homes
Marathon, - 92 Homes
Marengo, - 649 Homes
Massena, - 106 Homes
Maxwel, - 225 Homes
Maynard, - 147 Homes
McGregor, - 228 Homes
Mechanicsville, - 307 Homes
Mediapolis, - 468 Homes
Melbourne, - 191 Homes
Melvern, - 346 Homes
Menlo, - 102 Homes
Mills, - 117 Homes
Milo, - 247 Homes
Minburn, - 99 Homes
Minden, - 154 Homes
Mingo, - 72 Homes
Mondamin, - 115 Homes
Monona, - 434 Homes
Monroe, - 497 Homes
Montequma, - 472 Homes
Montrose, - 273 Homes
Mooreland, - 60 Homes
Moravia, - 194 Homes
Mount Vernon, - 1045 Homes
Mt Ayer, - 513 Homes
Mt Pleasant, - 2293 Homes
Mt Vernon, - 1045 Homes
Mystic, - 156 Homes
Nashua, - 422 Homes
Nevada, - 1717 Homes
New Hampton, - 1046 Homes
New London, - 549 Homes
Newel, - 311 Homes
Nora Springs, - 430 Homes
Iowa, - North Liberty, - 836 Homes
Northwood, - 554 Homes
Ocheydan, - 154 Homes
Odeboldt, - 331 Homes
Oelwein, - 1855 Homes
Ogden, - 545 Homes
Okoboji, - 221 Homes
Olin, - 189 Homes
Onawa, - 839 Homes
Orchard, - 27 Homes
Osage, - 983 Homes
Osceola Rural Water, - 1980 Homes
Page Rural Water, - 1150 Homes
Panama, - 57 Homes
Panora, - 314 Homes
Parkersburg, - 315 Homes
Paullina, - 324 Homes
Perry, - 1901 Homes
Pershing, - 195 Homes
Persia, - 29 Homes
Peterson, - 111 Homes
Plainfield, - 130 Homes
Pleasantville, - 439 Homes
Pocohontas, - 596 Homes
Polk City, - 545 Homes
Portsmouth, - 60 Homes
Postville, - 421 Homes
Poweshiek Rural Water, - 1917 Homes
Prairie City, - 390 Homes
Preston, - 293 Homes
Primgar , - 271 Homes
Princeton, - 258 Homes
PWA Plant, - 2355 Homes
Radcliffe, - 164 Homes
Randal, - 46 Homes
Readlyn, - 221 Homes
Red Oak, - 1790 Homes
Remsen, - 432 Homes
Rhodes, - 78 Homes
Riceville, - 236 Homes
Ricketts, - 35 Homes
Rippey, - 786 Homes
Rock Rapids, - 743 Homes
Rockford, - 247 Homes
Rockwell City, - 566 Homes
Roland, - 296 Homes
Iowa, - Rolfe, - 206 Homes
Rowan, - 54 Homes
Roya, - 133 Homes
Rural Water #1, - 1062 Homes
Ruthven, - 202 Homes
Sabula, - 203 Homes
Sac/Fox Tribe, - 400 Homes
Salix, - 105 Homes
Sanborn, - 384 Homes
Scranton, - 167 Homes
Seymour, - 248 Homes
Sgt Bluffs, - 792 Homes
Sheffield, - 325 Homes
Shelby Co Rural Water, - 381 Homes

Sheldon, - 1401 Homes
Shell Rock, - 396 Homes
Shenandoah, - 1602 Homes
Sibley, - 804 Homes
Sidney, - 358 Homes
Sigourney, - 603 Homes
Sioux Center, - 1450 Homes
Sioux Rapids, - 226 Homes
Sirwa, - 2700 Homes
Slater, - 362 Homes
Southern Sioux Rural Water, - 964 Homes
Spirit Lake, - 1106 Homes
Springville, - 305 Homes
St Ansgar , - 304 Homes
St Anthony, - 32 Homes
St Charles, - 153 Homes
Stanhope, - 128 Homes
Stanton, - 198 Homes
Stanwood, - 185 Homes
State Center, - 357 Homes
Story City, - 845 Homes
Stratford, - 204 Homes
Strawberry Point, - 388 Homes
Stuart, - 4325 Homes
Swea City, - 181 Homes
Tabor, - 284 Homes
Tama, - 771 Homes
Tempelton, - 92 Homes
Thompson, - 142 Homes
Tipton, - 857 Homes
Truro, - 112 Homes
Twin Lakes Utilities, - 300 Homes
Iowa, - Union, - 128 Homes
Vai, - 110 Homes
Van Horne, - 199 Homes
Van Meter, - 216 Homes
Ventura, - 169 Homes
Villisca, - 381 Homes
Vinton, - 1458 Homes
Walnut, - 387 Homes
Wappello Rural Water, - 3283 Homes
Waukon, - 1148 Homes
Waverly, - 2440 Homes
Webster City, - 2255 Homes
Wellsburg, - 195 Homes
Wesley, - 127 Homes
West Bend, - 246 Homes
West Branch, - 545 Homes
West Central Rural Water, - 987 Homes
West Liberty, - 839 Homes
What Cheer, - 218 Homes
Wheatland, - 207 Homes
Whittemore, - 153 Homes
Whitten, - 39 Homes
Williamsburg, - 621 Homes
Wilton, - 736 Homes
Winterset, - 1199 Homes
Winthrop, - 212 Homes
Woodbine, - 429 Homes
Woodward, - 342 Homes
Wyoming, - 188 Homes
Xenia, - 1075 Homes
Zearing, - 175 Homes
Homes
Homes
Idaho, - Aberdeen, - 700 Homes
Ahsaka W&S, - 35 Homes
Albion, - 200 Homes
American Falls, - 1400, - Alpine Meadows Water, - 90 Homes
Anrora Sub, - 10 Homes
Apache Hts Water, - 20 Homes
Aston, - 525 Homes
Aspen Acres Water, - 41 Homes
Atho, - 153 Homes
Atomic City, - 40 Homes
Avendale Water, - 410 Homes
Avery W&S, - 29 Homes
Idaho, - Avondale WD, - 1400 Homes
Barview Co-op WVA, - 20 Homes
Basalt, - 125 Homes
Bayview W&S Dist, - 300 Homes
Bellesire Acres, - 101 Homes
Bellevue, - 500 Homes
Blanchard WA, - 45 Homes
Bonners Ferry, - 590 Homes
Bonnie Laura , - 25 Homes
Bovil, - 120 Homes
Bruneau W&S Dist, - 75 Homes
Buh, - 3300 Homes
Buranie , - 24 Homes
Burley, - 3300 Homes
Butte, - 34 Homes
Calder, - 45 Homes
Camas Estates WV, - 20 Homes
Cambridge, - 220 Homes

Camelot WA, - 45, - Carey, - 150 Homes
Carlon Bay Services Coop, - 20 Homes
Castleford, - 118 Homes
Cataldo WD, - 187 Homes
Cave Bay Community WA, - 220 Homes
Central Shoshone Water Dist, - 2200 Homes
Challis, - 684 Homes
Chateaux WA, - 110 Homes
Cherry Lane Acres WA, - 16 Homes
Citizen Utilities Co, - 1200 Homes
Clark Fork, - 260 Homes
Clarkia W&S, - 33 Homes
Clearwater, - 51 Homes
Coar, - 450 Homes
Coeur D'alene, - 1140 Homes
Colburn WA, - 85 Homes
Colvert, - 60 Homes
Cooks Paradise Acres, - 16 Homes
Cooks Water, - 38 Homes
Cottonwood, - 261 Homes
Cottonwood W&S Asan, - 31 Homes
Counci, - 310 Homes
Craigmont, - 1144 Homes
Culdesac, - 129 Homes
Curley Creek Water, - 20, - Daul Sub Water, - 21, -
Deary, - 230 Homes
Idaho, - Declo, - 125 Homes
Donnelly, - 62 Homes
Dover, - 81 Homes
Downey, - 241 Homes
Driggs, - 400 Homes
Drummond, - 15 Homes
Dubois, - 200, - E Green Acres Irr., - 900 Homes
E Lizard Butte Wa, - 38 Homes
East Hope, - 150 Homes
East Shoshone Water Dist., - 1200 Homes
Easy Living Acres Wa, - 19 Homes
Eden, - 100 Homes
El Rancho Hts How, - 70 Homes
Elder Sub WA, - 31 Homes
Elk Bend, - 55 Homes
Elk City, - 65 Homes
Elk City W&S, - 147 Homes
Elk River, - 74 Homes
Elkins Water System, - 41 Homes
Elk River, - 134 Homes
Emmett, - 2000, - Fairfield, - 214 Homes
Fenn Community WA, - 16 Homes
Fernwood, - 165 Homes
Ferdinand, - 79 Homes
Filer, - 555 Homes
Firth, - 155 Homes
Forthall W&S Dist., - 98 Homes
Franklin Comestic WVA, - 20 Homes
Fruitland, - 850, - Franklin, - 175 Homes
Genesee, - 350 Homes
Glenns Ferry, - 635 Homes
Gooding, - 1200 Homes
Grace, - 400 Homes
Grandview, - 143 Homes
Grangeville, - 140 Homes
Hackney W&S Dist, - 33 Homes
Hailey, - 1200 Homes
Harrison, - 150, - Hansen, - 370 Homes
Happy Valley Ranchos WA, - 60 Homes
Harpster W. D., - 17 Homes
Harvard, - 31 Homes
Hauser Lake WA, - 400 Homes
Idaho, - Hayden Lake Irrigation, - 550 Homes
Hazelton, - 240 Homes
Helmer WA, - 12 Homes
Heyburn, - 900 Homes
Hoo Doo W&S, - 35 Homes
Homedale, - 929 Homes
Hope, - 65 Homes
Horseshoe Bend, - 350 Homes
Howe, - 27 Homes
Huetter, - 25 Homes
Hullen Meadows WA, - 140 Homes
Idaho Youth Services Center, - 25 Homes
Iola W&S, - 36 Homes
Incom, - 260 Homes
Jerome, - 3500 Homes
Judge Town Water, - 25 Homes
Juliaeatta, - 250 Homes
Kamiah, - 700 Homes
Karcher Acres, - 30 Homes
Kendrick, - 220 Homes
Ketchum Water Dist, - 721 Homes
Kimberly, - 996 Homes
King Hil, - 33 Homes
Kingston Water, - 265 Homes
Kirtley Wa, - 20 Homes
Klugaerz Water Co, - 52 Homes
Konkoville Wa, - 15 Homes
Kooskia, - 910 Homes

Kootenai #1, - 150 Homes
Krieger Sub Wa, - 80 Homes
Kullyspel, - 20 Homes
Kuna, - 640 Homes
Kutenia Water, - 210 Homes
Laclede, - 125 Homes
Lakeridge 2nd Sub WA, - 15 Homes
Lakeview Hill WVA, - 25 Homes
Lapwai, - 340 Homes
Larson , - 29 Homes
Lawyers Creek , - 31 Homes
Leisure Hts WA, - 60 Homes
Lindenwood WA, - 20 Homes
Locust Sub POA, - 14 Homes
M&M Mountainview WA, - 24 Homes
M&T Water Corp, - 29 Homes
Mackey, - 350 Homes
Magnum Heights WA, - 24 Homes
Idaho, - Malad Hilton Water, - 24 Homes
Marion Pipeline, - 50 Homes
Marsing, - 370 Homes
McCall Water & Sewer, - 341 Homes
McCammon, - 250 Homes
Meadows Creek POA, - 70 Homes
Mellen WD, - 64 Homes
Meridian Heights Water, - 740 Homes
Midvale, - 115 Homes
Montpieler, - 1100 Homes
Moore W&S, - 150 Homes
Mores Creek Rim Ranches, - 50 Homes
Morrison Estates HOA, - 20 Homes
Mt Home, - 2800 Homes
Murray Water Works, - 26 Homes
Murphy, - 50 Homes
Murtaugh, - 70 Homes
New Meadows, - 275 Homes
New Plymouth, - 500 Homes
Newdale, - 101 Homes
Newhope WA, - 15 Homes
Nez Pierce Housing, - 106 Homes
North Fork WA, - 35 Homes
North Oakley WD, - 80 Homes
North Tomer Butte Water, - 80 Homes
Northford WA, - 35 Homes
Notus, - 175, - Oakley, - 310 Homes
Oden WA, - 177 Homes
Onaway W&s, - 87 Homes
Orofino, - 860 Homes
Owyhee Village Sub Water, - 67 Homes
Panhandle Mobile Home WA, - 64 Homes
Paris, - 250 Homes
Paradise Acres, - 24 Homes
Paradise Est, - 65 Homes
Paradise Point Water, - 35 Homes
Payette Lake W&s, - 211 Homes
Picabo Wa, - 28 Homes
Pinehurst Water Dist, - 700 Homes
Pineview Eststes, - 160 Homes
Pinevilla Park & Water Assn, - 225 Homes
Pleasant Acres, - 40 Homes
Pleasant Meadows WA, - 12 Homes
Plummer, - 280 Homes
Post Falls Water, - 441 Homes
Idaho, - Potlatch Water, - 260 Homes
Praire WA, - 25 Homes
Parker, - 110 Homes
Parma, - 720 Homes
Paulo, - 454 Homes
Payette, - 2000 Homes
Peck, - 100 Homes
Pierce, - 300 Homes
Plummer, - 550 Homes
Post Falls, - 3400 Homes
Potlatch, - 350 Homes
Preston, - 1570 Homes
Priest Lake, - 195 Homes
Rapid River W&S, - 32 Homes
Rathdrum, - 650 Homes
Reamy WA, - 23 Homes
Red Rock Water Co, - 45 Homes
Riggins, - 410 Homes
Riverbend Est WA, - 15 Homes
Rivers Point POA, - 40 Homes
Riverside W&S, - 550 Homes
Rose Lake Water, - 125 Homes
Ross Point Wd, - 700 Homes
Roswell Water User Corp., - 28 Homes
Ruebens, - 28 Homes
Rupert, - 2000 Homes
Russel Sub Water, - 12 Homes
Sagle Est WA, - 24 Homes
Salmon River Meadows WA, - 35 Homes
Sandpoint, - 2000 Homes
Santa WD, - 50 Homes
Seasons , - 20 Homes
Shalmar, - 103 Homes

Shamrock Villa WA, - 40 Homes
Shelly, - 1100 Homes
Shoshone Banock Tribe W&S, - 200 Homes
Silver Creek Water, - 42 Homes
Skin Creek WA, - 63 Homes
Skyline Terrace, - 10 Homes
Somerset West Water Corp, - 55 Homes
Soda Springs, - 1500 Homes
South County Water, - 1140 Homes
Southside W&S, - 150 Homes
Spirit Lake, - 300 Homes
Spring Ck Terrace , - 18 Homes
St. Anthony, - 1000 Homes
Idaho, - St. Maries, - 1200 Homes
Stanley, - 32 Homes
Stecher Mutual Water Co, - 21 Homes
Stites, - 115 Homes
Steelhead Bend Mutual Water, - 12 Homes
Sugar City, - 280 Homes
Summerwind WVA, - 55 Homes
Sunny Ridge Sub WA, - 15 Homes
Sunnyridge #2, - 11 Homes
SW Ada Water, - 840 Homes
Syringa Water, - 40 Homes
Tamarack Water Dist, - 40 Homes
Tensed, - 60 Homes
Trinity W.A., - 58 Homes
Troy, - 350 Homes
Twenty Mile Creek WA, - 90 Homes
Twin Bridges WA, - 12 Homes
Twin Falls, - 910 Homes
Valley View Sub WA, - 16 Homes
Vanal Heights Wa, - 14 Homes
Verde Hills Sub W Wa, - 30 Homes
Viola W & S Dist., - 36 Homes
Victor, - 160, - Waha Glen, - 41 Homes
Weippe, - 248 Homes
Weiser, - 2480 Homes
Wende, - 800 Homes
Wendlemere WD, - 49 Homes
West Bonner WD, - 220 Homes
Westview Sub WA, - 32 Homes
Weston, - 120 Homes
Whitebird, - 71 Homes
Whitney Nashville Water Co, - 110 Homes
Wilder, - 450 Homes
Willowbrook Est, - 25 Homes
Winchester, - 198 Homes
Woodland Pk WA, - 85 Homes
Woodview Acres WA, - 71 Homes
Worley, - 131 Homes
Homes
Homes
Illinois, - ADGPTV Water Comm., - 400 Homes
Akin, - 600 Homes
Albers, - 265 Homes
Albion, - 1200 Homes
Alexander Co. PWD, - 300 Homes
Illinois, - Alexia, - 450 Homes
Alpha, - 363 Homes
Alto Pass, - 355 Homes
Altona, - 172 Homes
Amboy, - 1000 Homes
Arenzville, - 162 Homes
Arlington, - 90 Homes
Arrowsmith City Hal, - 100 Homes
Arthur, - 650 Homes
Ashland, - 540 Homes
Athens, - 900 Homes
Atwood, - 530 Homes
Auburn, - 1300 Homes
Augusta, - 190 Homes
Ava WP, - 400 Homes
Baldwin, - 134 Homes
Baylis, - 110 Homes
Beardstown, - 1030 Homes
Beason-Chestnut PWD, - 190 Homes
Belle River, - 800 Homes
Bement, - 553 Homes
Benton, - 2500 Homes
Blue Mound, - 475 Homes
Bluford, - 600 Homes
Bonnie, - 170 Homes
Bowen, - 142 Homes
Bradford, - 325 Homes
Brimfield City Hal, - 300 Homes
Broadlands, - 160 Homes
Broadwel, - 60 Homes
Brockton, - 165 Homes
Broughton, - 65 Homes
Brownstown, - 400 Homes
Burnt Prairie, - 40 Homes
Bushnell W.P., - 1300 Homes
Byron, - 950 Homes
Cabary, - 105 Homes
Camarga, - 250 Homes

Camden-littleton, - 360 Homes
Camp Grove, - 50 Homes
Camp Point, - 370 Homes
Cantral, - 50 Homes
Carbon Hil, - 100 Homes
Carlinville, - 2550 Homes
Carmi, - 3500 Homes
Carrollton, - 800 Homes
Illinois, - Carthage, - 1200 Homes
Caterpillar Trails PWD, - 800 Homes
Central Alexander Co PWD, - 850 Homes
Cerro Gordo, - 586 Homes
Chadwick, - 290 Homes
Chandlerville, - 329 Homes
Chapin WP, - 248 Homes
Chatham, - 2000 Homes
Chatsworth, - 364 Homes
Chenoa Water Plant, - 740 Homes
Cherry Bank, - 190 Homes
Chester, - 2300 Homes
Chrisman (Water Plant), - 350 Homes
Cisco, - 145 Homes
Clayton, - 350 Homes
Clearwater Service Corp., - 1300 Homes
Clinton WP, - 2800 Homes
Coal City, - 120 Homes
Cobden, - 446 Homes
Cordova City Hal, - 248 Homes
Cornel, - 260 Homes
Coulchester, - 800 Homes
Cowden, - 300 Homes
Crossville, - 270 Homes
Cuba City Hal, - 600 Homes
Curran-Gardner, - 1700 Homes
Dahlgren, - 245 Homes
Dallas City WP, - 325 Homes
Dalton City, - 240 Homes
Danvers, - 370 Homes
Dawson, - 540 Homes
Deer Creek, - 265 Homes
Delaven Wp, - 750 Homes
Dietrich, - 240 Homes
Divernon, - 430 Homes
Dix-Kell Water Comm., - 530 Homes
Dongola, - 224 Homes
Dorchester, - 160 Homes
Dover WP, - 60 Homes
Dowell City Hal, - 510 Homes
Downs, - 210 Homes
E-J Water Corp., - 400 Homes
Earlville WP, - 675 Homes
Easton, - 120 Homes
Edgewood, - 250 Homes
Edinburg, - 550 Homes
Illinois, - Effingham Wtp, - 3500 Homes
El Paso Wt, - 950 Homes
Eldred, - 120 Homes
Elkhart, - 200 Homes
Elkville, - 435 Homes
Ellery Water Corp, - 250 Homes
Ellis Grove, - 150 Homes
Ellsworth Wp, - 89 Homes
Elmwood, - 900 Homes
Elvaston, - 70 Homes
Emden, - 200 Homes
Emington, - 80 Homes
Enfield, - 340 Homes
Erie W P, - 620 Homes
Eureka, - 1230 Homes
Evansville, - 260 Homes
Ewing-Ina Wtr Cmsn, - 750 Homes
Fairbury WP, - 1430 Homes
Fairfield Water Plant, - 3000 Homes
Farina, - 265 Homes
Farmer City, - 800 Homes
Farmersville, - 300 Homes
Fayette Water Company, - 100 Homes
Filmore, - 180 Homes
Forrest, - 370 Homes
Forsyth, - 600 Homes
Fountain Water, - 260 Homes
Franklin, - 300 Homes
Ft. Massac Rwd, - 1000 Homes
Fulton, - 1460 Homes
Fyre Lake, - 100 Homes
Fyre Lake Water Company, - 100 Homes
Galva Water Plant, - 1300 Homes
Gardner, - 381 Homes
Gibson City, - 1500 Homes
Gilman, - 760 Homes
Golden, - 173 Homes
Good Hope Wp, - 162 Homes
Goodfield, - 200 Homes
Goreville, - 360 Homes
Grafton, - 350 Homes
Grand Ridge, - 300 Homes

Grant Park, - 315 Homes
Grayville, - 660 Homes
Green Valley, - 225 Homes
Greenfield, - 515 Homes
Illinois, - Greenview, - 350 Homes
Gridley, - 400 Homes
Hame, - 235 Homes
Hamilton, - 1300 Homes
Harristown, - 480 Homes
Havana WP, - 1500 Homes
Heartville P.W.D., - 200 Homes
Henry, - 1130 Homes
Herscher, - 1000 Homes
Heyworth, - 615 Homes
Highland, - 2508 Homes
Hillview, - 100 Homes
Hopedale, - 340 Homes
Hul, - 235 Homes
Humboldt, - 190 Homes
Hurst City Hal, - 280 Homes
Illiopolis, - 287 Homes
Industry, - 175 Homes
Ipava, - 290 Homes
Jerome, - 450 Homes
Jersey County Rural Water Company, - 2050 Homes
Jerseyville W T P, - 2800 Homes
Johnson City City Hal, - 330 Homes
Jonesboro City Hal, - 125 Homes
Jonesville P.w.d., - 110 Homes
Kampsville, - 225 Homes
Kempton, - 110 Homes
Kenney, - 200 Homes
Kincaid, - 750 Homes
Kingston Mines, - 105 Homes
Kinmundy, - 375 Homes
Kinsman, - 60 Homes
Knoxville WP, - 1200 Homes
La Harpe WP, - 635 Homes
Lacon, - 870 Homes
Ladd Wp, - 525 Homes
Lake Arispie Water Co., - 12 Homes
Lamoille, - 320 Homes
Lanark, - 650 Homes
Leaf River, - 300 Homes
Lebanon, - 1000 Homes
Leroy, - 1100 Homes
Livingston, - 370 Homes
Loami, - 275 Homes
Long Creek Township Water Dist., - 700 Homes
Lostant, - 240 Homes
Illinois, - Lyndon, - 240 Homes
Macon, - 520 Homes
Maeystown, - 45 Homes
Mahomet, - 1170 Homes
Malden, - 145 Homes
Malta Wp, - 280 Homes
Manito, - 780 Homes
Manlius Wp, - 200 Homes
Mansfield, - 370 Homes
Mapleton, - 80 Homes
Maroa, - 760 Homes
Marseilles City Hal, - 180 Homes
Mascoutah City Hal, - 2200 Homes
Mason City, - 1075 Homes
Mazon, - 350 Homes
Mcclure E. Cape PWD, - 350 Homes
Mcleansboro, - 1200 Homes
Melvin, - 250 Homes
Menard Co. Water Commision, - 0 Homes
Mendota City Hal, - 2500 Homes
Metamora, - 825 Homes
Middletown, - 225 Homes
Milford, - 700 Homes
Mill Shoals, - 161 Homes
Milledgeville, - 530 Homes
Milton, - 130 Homes
Minier, - 356 Homes
Minonk City Hal, - 900 Homes
Monmouth, - 4100 Homes
Monticello, - 1800 Homes
Montrose, - 130 Homes
Morris, - 3000 Homes
Morrisonville City Hal, - 493 Homes
Mounds, - 250 Homes
Moweaqua, - 825 Homes
Mt. Auburn, - 290 Homes
Mt. Clare, - 300 Homes
Mt. Morris, - 1050 Homes
Mt. Pulaski, - 850 Homes
Mt. Zion, - 1300 Homes
Murdale P.W.D., - 1500 Homes
Murrayville Woodson Water Co., - 400 Homes
N.E. Mt. Vernon PWD, - 1270 Homes
Naschusa Lutheran Home, - 9 Homes
Nauvoo, - 480 Homes
New Athens, - 550 Homes

Illinois, - New Berlin, - 350 Homes
New Burnside PWD, - 360 Homes
New Canton, - 200 Homes
New Holland, - 150 Homes
Newton, - 1700 Homes
No. Tazewell PWD, - 2900 Homes
North East Central PWD, - 600 Homes
Northeast Water Co., - 1300 Homes
Oakford, - 100 Homes
Oakland, - 570 Homes
Oakwood City Hal, - 770 Homes
Oglesby, - 1040 Homes
Ohio, - 240 Homes
Oquawka WP, - 660 Homes
Oregon, - 1120 Homes
Orient, - 200 Homes
Oswego City Hal, - 1200 Homes
Palmer, - 80 Homes
Palmyra, - 340 Homes
Pana, - 1800 Homes
Patoka, - 340 Homes
Paw Paw City Hal, - 340 Homes
Pear, - 120 Homes
Pecatonica City Hal, - 750 Homes
Penfield, - 95 Homes
Peoria Heights, - 3000 Homes
Pesodum W P, - 175 Homes
Petersburg, - 1600 Homes
Philo, - 355 Homes
Pierron, - 165 Homes
Pike Co. Water District, - 500 Homes
Pinckneyville Wtp, - 1600 Homes
Piper City W P, - 350 Homes
Pittsfield, - 1301 Homes
Pleasant Hil, - 525 Homes
Pleasant Valley Water, - 800 Homes
Pocahontas, - 400 Homes
Polo, - 950 Homes
Port Byron, - 310 Homes
Potomac W P, - 250 Homes
Prairie du Rocher, - 280 Homes
Princeton, - 2100 Homes
Princeville, - 670 Homes
Prophetstown, - 870 Homes
Pulaski, - 200 Homes
Pyramid State P k, - 1 Homes
Illinois, - Racccoon Water Co., - 1100 Homes
Ramsey, - 410 Homes
Ransom, - 180 Homes
Raritan, - 85 Homes
Red Bud, - 926 Homes
Richmond, - 375 Homes
Ridge Farm, - 425 Homes
Rio, - 105 Homes
Riverton, - 1500 Homes
Rochelle, - 6000 Homes
Rochester, - 975 Homes
Rock Falls W P, - 3001 Homes
Roodhouse, - 685 Homes
Roseville Wp, - 400 Homes
Roya, - 120 Homes
Ruma, - 120 Homes
Rutland Water Plant, - 120 Homes
S.M.G. Rural Water District, - 100 Homes
Salem, - 3230 Homes
Sandoval City Hal, - 615 Homes
Sandwich Wp, - 2200 Homes
Scottville Rwd, - 160 Homes
Seneca Water Plant, - 800 Homes
Sesser, - 1100 Homes
Shabbona City Hal, - 400 Homes
Shannon, - 400 Homes
Sheldon, - 550 Homes
Sidel, - 275 Homes
Smithton, - 450 Homes
So. Fulton Co. W.D., - 120 Homes
South Jacksonville, - 1000 Homes
South Pekin, - 435 Homes
South Wilmington WP, - 405 Homes
Sparland, - 200 Homes
Spaulding, - 400 Homes
St. Elmo, - 690 Homes
St. Marie, - 150 Homes
Stanford WP, - 200 Homes
Staunton, - 2131 Homes
Stelle WP, - 48 Homes
Stonefort, - 130 Homes
Stonington, - 450 Homes
Stronghurst WP, - 390 Homes
Sugar Creek PWD, - 300 Homes
Swedona Water, - 30 Homes
T-L Rural Water Dist., - 10 Homes
Illinois, - Table Grove, - 220 Homes
Tallula, - 370 Homes
Tamms, - 320 Homes
Tampico, - 375 Homes

Taylorville, - 5100 Homes
Teutopolis, - 520 Homes
Thebes, - 150 Homes
Thomasboro W P, - 354 Homes
Thompson, - 190 Homes
Three County PWD, - 550 Homes
Toledo City Hal, - 500 Homes
Tolono, - 800 Homes
Toulon City Hal, - 550 Homes
Towanda, - 230 Homes
Tower Hil, - 250 Homes
Tremont, - 850 Homes
Trenton, - 1000 Homes
Tuetopolis, - 520 Homes
Valmeyer, - 350 Homes
Vermont, - 430 Homes
Vernon WP, - 80 Homes
Victoria, - 92 Homes
Villa Grove, - 1050 Homes
Virden, - 1600 Homes
Virginia, - 750 Homes
Waggoner, - 120 Homes
Walnut City Hal, - 600 Homes
Wapella, - 270 Homes
Washburn, - 430 Homes
Waterman City Hal, - 400 Homes
Watson, - 210 Homes
Waverly, - 461 Homes
Wayne City, - 338 Homes
Weldon WP, - 228 Homes
Wellington, - 110 Homes
Wenona Water Plant, - 500 Homes
West Brooklyn WP, - 45 Homes
Williamsville, - 900 Homes
Willow Hil, - 130 Homes
Wilsonville, - 300 Homes
Windwood Water, - 50 Homes
Witt, - 510 Homes
Woodhull WP, - 400 Homes
Woodlawn, - 900 Homes
Wyoming, - 720 Homes
Yates City, - 350 Homes

Indiana,

Akron, - 350 Homes
Albany, - 934 Homes
And-Tro, - 550 Homes
Andrews, - 460 Homes
Arcadia, - 650 Homes
Argos, - 650 Homes
Ashley, - 500 Homes
Atlanta, - 284 Homes
Attica, - 1500 Homes
Aurora, - 2100 Homes
B&B Water, - 1530 Homes
Bainbridge, - 300 Homes
Bargersville, - 4100 Homes
Batesville, - 1350 Homes
Beanblossom-Patricksburg, - 3125 Homes
Berne, - 1300 Homes
Bicknel, - 1830 Homes
Birdseye, - 360 Homes
Bourbon, - 825 Homes
Bremen, - 1500 Homes
Brookston, - 750 Homes
Brookville, - 1200 Homes
Brown County, - 3450 Homes
Bruceville, - 300 Homes
Bunker Hil, - 450 Homes
Butler, - 900 Homes
Cambridge City, - 1100 Homes
Campbellsburg, - 185 Homes
Canaan, - 1178 Homes
Carlisle, - 480 Homes
Carthage, - 400 Homes
Cayuga, - 512 Homes
Centerville, - 923 Homes
Chalmers, - 235 Homes
Chandler, - 5000 Homes
Charlestown, - 1100 Homes
Cicero, - 1500 Homes
Clarks Hil, - 285 Homes
Clay City, - 560 Homes
Claypoo, - 160 Homes
Cloverdale, - 900 Homes
Connersville, - 3100 Homes
Cordy-Sweetwater, - 1140 Homes
Corydon, - 330 Homes
Country Squire, - 3000 Homes
Covington, - 1144 Homes
Indiana, - Crawford Rura, - 530 Homes
Crothersville, - 730 Homes
Davies County Water, - 1125 Homes
Delphi, - 1250 Homes
Dillsboro, - 600 Homes
Dublin, - 160 Homes
Dubois, - 2590 Homes

Dugger, - 825 Homes
Dunkirk, - 1188 Homes
Dupont, - 1030 Homes
E. Washington, - 1500 Homes
Earl Park, - 196 Homes
East Lawrence, - 2625 Homes
Eastern Bartholomew, - 3100 Homes
Eastern Heights, - 4625 Homes
Eastern Monroe Water, - 1061 Homes
Eaton, - 630 Homes
Edinburgh, - 1600 Homes
Edwardsville, - 2500 Homes
Elizabeth, - 955 Homes
Ellettsville, - 3000 Homes
Ellis, - 1020 Homes
Elnora, - 725 Homes
Elrod, - 1500 Homes
English, - 289 Homes
Etna Green, - 255 Homes
Everton, - 528 Homes
Fairmount, - 1150 Homes
Farmersburg, - 670 Homes
Farmland, - 600 Homes
Floyds Knobs, - 1265 Homes
Fortville, - 1100 Homes
Fountain City, - 321 Homes
Francesville, - 450 Homes
Franciso, - 434 Homes
Franklin County Water, - 1800 Homes
Fremont, - 500 Homes
Galveston, - 450 Homes
Gas City, - 2700 Homes
Gaston, - 350 Homes
Gentryville, - 515 Homes
Georgetown, - 900 Homes
German Township Water, - 2500 Homes
Glenwood, - 135 Homes
Goodland, - 500 Homes
Gosport, - 340 Homes
Indiana, - Grantsburg, - 70 Homes
Greendale, - 1550 Homes
Greenfield, - 4000 Homes
Greensburg, - 3400 Homes
Greentown, - 750 Homes
Greenville, - 1100 Homes
Hagerstown, - 804 Homes
Hamilton, - 620 Homes
Hamlet, - 300 Homes
Hanover, - 900 Homes
Hartford City, - 3300 Homes
Hayden, - 758 Homes
Hebron, - 1200 Homes
Helmsburg, - 3900 Homes
Henryville, - 1300 Homes
Hidden Valley, - 2000 Homes
Hill Water, - 1825 Homes
Holland, - 684 Homes
Holton, - 530 Homes
Hope, - 804 Homes
Huntington, - 1810 Homes
Hvl Utilities, - 966 Homes
Ingalls, - 900 Homes
Jackson County, - 3800 Homes
Jamestown, - 430 Homes
Johnson's Mobile Home Park, - 18 Homes
Jonesboro, - 70 Homes
Kent, - 1800 Homes
Kentland, - 835 Homes
Kevanna, - 350 Homes
Kingman, - 226 Homes
Kingsford Heights, - 520 Homes
Kirklin, - 330 Homes
Knightstown, - 1100 Homes
Knox Water, - 2850 Homes
Kouts, - 635 Homes
L&M Regional Water Dist., - 156 Homes
Ladoga, - 520 Homes
Lafontaine, - 580 Homes
Lagro, - 200 Homes
Lake Santee, - 454 Homes
Lanesville, - 300 Homes
Lape, - 750 Homes
Laura, - 220 Homes
Lawrenceburg, - 4900 Homes
Leavenworth, - 131 Homes
Indiana, - Lewisville, - 160 Homes
Liberty, - 1000 Homes
Ligonier, - 1200 Homes
Linden, - 325 Homes
Linton, - 3152 Homes
LMS Township Cons. Dist., - 1511 Homes
Loogootee, - 1500 Homes
Lynn, - 500 Homes
Marengo, - 400 Homes
Markle, - 450 Homes
Marshal, - 300 Homes

Marysville, - 2000 Homes
Medaryville, - 250 Homes
Medora, - 400 Homes
Middleton, - 550 Homes
Milan, - 600 Homes
Millersburg, - 337 Homes
Milltown, - 480 Homes
Milroy, - 279 Homes
Mitchel, - 3500 Homes
Mon Water, - 1600 Homes
Monroe, - 240 Homes
Monroeville, - 580 Homes
Montpelier, - 800 Homes
Morgantown, - 300 Homes
Morocco, - 485 Homes
Morristown, - 500 Homes
Mt. Summit, - 150 Homes
Napoleon, - 650 Homes
Nashville, - 1100 Homes
New Pekin, - 660 Homes
New Richmond, - 285 Homes
New Whiteland, - 1550 Homes
Newberry, - 110 Homes
North Dearborn, - 1252 Homes
North Liberty, - 535 Homes
North Salem, - 260 Homes
North Vernon, - 2000 Homes
Odon, - 667 Homes
Oldenburg, - 250 Homes
Oolitic, - 580 Homes
Orestes, - 193 Homes
Orland, - 200 Homes
Osgood, - 737 Homes
Ossian, - 1000 Homes
Otisco, - 1650 Homes
Indiana, - Otwel, - 850 Homes
Oxford, - 525 Homes
Palmyra, - 1050 Homes
Paoli, - 2500 Homes
Paragon, - 230 Homes
Patoka Lake, - 1980 Homes
Patriot, - 2003 Homes
Paxton, - 500 Homes
Pekin, - 650 Homes
Pendleton, - 1133 Homes
Pennville, - 265 Homes
Perrysville, - 450 Homes
Pine Crest MHP, - 150 Homes
Pittsboro, - 450 Homes
Poseyville, - 513 Homes
Princes Lakes, - 1081 Homes
Princeton, - 4550 Homes
Pueblo MHP, - 90 Homes
Ramsey, - 3500 Homes
Redkey, - 545 Homes
Remington, - 580 Homes
Ridgeville, - 350 Homes
Rising Sun, - 2311 Homes
Roachdale, - 400 Homes
Roann, - 200 Homes
Roanoke, - 560 Homes
Rochester, - 1850 Homes
Rockville, - 1500 Homes
Rossville, - 580 Homes
Rushville, - 2500 Homes
Russiaville, - 350 Homes
S. Harrison, - 1690 Homes
Salem, - 3500 Homes
Schneider, - 122 Homes
Scottsburg, - 2305 Homes
Seelyville, - 1900 Homes
Sellersburg, - 3250 Homes
Shelburn, - 840 Homes
Sheridan, - 800 Homes
Shipshewana, - 300 Homes
Shirley, - 400 Homes
Shoals, - 891 Homes
Silver Creek Water, - 3000 Homes
Silver Lake, - 200 Homes
South Whitley, - 650 Homes
Southwest Bartholomew, - 1900 Homes
Indiana, - Spencer, - 2705 Homes
Spiceland, - 450 Homes
Springs Valley Regions, - 1200 Homes
Spurgeon, - 185 Homes
St Pau, - 401 Homes
St. John, - 2500 Homes
St. Meinrad, - 215 Homes
Stucker Fork, - 5600 Homes
Summitville, - 400 Homes
Sunman, - 300 Homes
Swayzee, - 475 Homes
Tell City, - 3400 Homes
Topeka, - 420 Homes
Troy, - 500 Homes
Vanburren, - 350 Homes

Veedersburg, - 950 Homes
Vernon, - 315 Homes
Versailles, - 750 Homes
Vevay, - 725 Homes
Waldron, - 227 Homes
Walton, - 450 Homes
Warren, - 590 Homes
Water Tower MHP, - 45 Homes
Waterloo, - 752 Homes
Waynetown, - 450 Homes
Well Field, - 3868 Homes
West Lebanon, - 326 Homes
Westport, - 586 Homes
Whiteland, - 1100 Homes
Whitestown, - 200 Homes
Windfal, - 340 Homes
Wingate, - 167 Homes
Wolcott, - 750 Homes
Wolcottville, - 300 Homes
Yorktown, - 950 Homes
Homes
Homes
Kansas, - Allen RWD #10, - 40 Homes
Allen RWD 2, - 22 Homes
Allen RWD 8, - 225 Homes
Anderson RWD 1, - 15 Homes
Anderson RWD 4, - 253 Homes
Anderson RWD 5, - 671 Homes
Anderson RWD 6, - 330 Homes
Blue River Hills Imp. Dist., - 38 Homes
Bourbon Cons RWD 2, - 2125 Homes
Kansas, - Brown RWD 1, - 370 Homes
Brown RWD 2, - 300 Homes
Butler RWD 1, - 210 Homes
Butler RWD 5, - 890 Homes
Butler RWD 7, - 264 Homes
Chautauqua RWD 2, - 144 Homes
Cherokee RWD 2, - 285 Homes
Cherokee RWD 4, - 415 Homes
Cherokee RWD 8, - 200 Homes
City of Buffalo, - 108 Homes
City of Altoona, - 226 Homes
City of Arcadia, - 100 Homes
City of Baldwin, - 1100 Homes
City of Benton, - 300 Homes
City of Bonner Springs, - 2756 Homes
City of Bronson, - 140 Homes
City of Bucklin, - 389 Homes
City of Buffalo, - 226 Homes
City of Buhler, - 559 Homes
City of Burden, - 143 Homes
City of Cherokee, - 246 Homes
City of Cherryvale, - 1200 Homes
City of Colony, - 123 Homes
City of Denison, - 64 Homes
City of Effingham, - 250 Homes
City of Elgin, - 35 Homes
City of Erie, - 426 Homes
City of Florence, - 212 Homes
City of Frankfort, - 398 Homes
City of Fredonia, - 1120 Homes
City of Fulton, - 60 Homes
City of Galena, - 988 Homes
City of Galesburg, - 76 Homes
City of Gas, - 175 Homes
City of Goff, - 130 Homes
City of Gridley, - 112 Homes
City of Hamilton, - 200 Homes
City of Hanover, - 340 Homes
City of Harper, - 496 Homes
City of Hartford, - 148 Homes
City of Herington, - 654 Homes
City of Hiawatha, - 1750 Homes
City of Holton, - 1470 Homes
City of Humbodt, - 1000 Homes
City of Independence, - 4150 Homes
City of La Harpe, - 206 Homes
Kansas, - City of Lane, - 110 Homes
City of Lawrence, - 22000 Homes
City of Leavenworth, - 4000 Homes
City of Lebo, - 412 Homes
City of Leroy, - 302 Homes
City of Liberty, - 150 Homes
City of Longton, - 50 Homes
City of Lyndon, - 322 Homes
City of Madison, - 480 Homes
City of Marysville, - 1590 Homes
City of Mayetta, - 130 Homes
City of Mclouth, - 250 Homes
City of Meridan, - 207 Homes
City of Moline, - 302 Homes
City of Moran, - 157 Homes
City of Morril, - 135 Homes
City of Mound City, - 310 Homes
City of Neodesha, - 937 Homes
City of New Strawn, - 200 Homes

City of Oskaloosa, - 500 Homes
City of Oswego, - 160 Homes
City of Ozawkie, - 209 Homes
City of Parsons, - 3000 Homes
City of Perry, - 365 Homes
City of Peru, - 80 Homes
City of Pomona, - 278 Homes
City of Princeton, - 120 Homes
City of Rantou, - 58 Homes
City of Richmond, - 120 Homes
City of Riverton, - 350 Homes
City of Sawyer, - 126 Homes
City of Scammon, - 123 Homes
City of Scranton, - 300 Homes
City of Spring Hil, - 880 Homes
City of St Pau, - 191 Homes
City of Sterling, - 875 Homes
City of Strong City, - 323 Homes
City of Summerfield, - 120 Homes
City of Thayer, - 153 Homes
City of Toronto, - 150 Homes
City of Towanda, - 443 Homes
City of Troy, - 665 Homes
City of Uniontown, - 91 Homes
City of Virgi, - 35 Homes
City of Walnut, - 130 Homes
City of Wamego, - 1589 Homes
Kansas, - City of Wathena, - 350 Homes
City of Waverly, - 294 Homes
City of Weir, - 240 Homes
City of West Minera, - 70 Homes
City of Williamsburg, - 152 Homes
City of Winchester, - 229 Homes
City of Yates Center, - 825 Homes
City of Perry, - 265 Homes
Coffey RWD 2, - 654 Homes
Coffey RWD 3, - 420 Homes
Cowley RWD 2, - 174 Homes
Cowley RWD 4, - 167 Homes
Crawford RWD 2, - 319 Homes
Crawford RWD 6, - 331 Homes
Douglas #4, - 728 Homes
Elk RWD 1, - 273 Homes
Ellsworth RWD 1, - 987 Homes
Franklin RWD 6, - 530 Homes
Geary RWD 4, - 400 Homes
Greenwood RWD 1, - 463 Homes
Greenwood RWD 2, - 466 Homes
Greenwood RWD 3, - 0 Homes
Harper RWD 5, - 99 Homes
Harvey RWD 1, - 870 Homes
Hiawatha, - 1750 Homes
Jackson RWD 1, - 638 Homes
Jackson RWD 3, - 1350 Homes
Jefferson RWD 1, - 900 Homes
Jefferson RWD 12, - 878 Homes
Jefferson RWD 13, - 583 Homes
Jefferson RWD 15, - 75 Homes
Jewell RWD 1, - 400 Homes
Johnson RWD 7, - 1300 Homes
Kickapoo Indian Reservation, - Homes
Kingman RWD 1, - 140 Homes
Labette RWD 5, - 333 Homes
Labette RWD 6, - 455 Homes
Leavenworth RWD 9, - 580 Homes
Linn RWD 1, - 330 Homes
Lyon RWD 2, - 560 Homes
Marion RWD 1, - 130 Homes
Marion RWD 4, - 575 Homes
Marshall RWD 3, - 510 Homes
McPherson RWD 2, - 59 Homes
Miami RWD 2, - 2300 Homes
Milford State Park, - Homes
Kansas, - Mitchell RWD 3, - 550 Homes
Mithchell RWD 2, - 376 Homes
Montgomery County Utilities, - 800 Homes
Montgomery RWD 1, - 64 Homes
Montgomery RWD 10, - 86 Homes
Montgomery RWD 2, - 185 Homes
Montgomery RWD 3, - 30 Homes
Montgomery RWD 5, - 552 Homes
Montgomery RWD 6, - 400 Homes
Nemaha RWD 1, - 126 Homes
Nemaha RWD 3, - 873 Homes
Neosho RWD 10, - 158 Homes
Neosho RWD 11, - 30 Homes
Neosho RWD 12, - 127 Homes
Neosho RWD 2, - 478 Homes
Neosho RWD 3, - 32 Homes
Neosho RWD 4, - 832 Homes
Neosho RWD 5, - 45 Homes
Neosho RWD 6, - 146 Homes
Neosho RWD 7, - 208 Homes
Osage RWD #7, - 442 Homes
Osage RWD 8, - 842 Homes
Osborne RWD 1, - 100 Homes

Ottawa RWD 1, - 64 Homes
Post Rock RWD 1, - 987 Homes
Pottawatomie RWD 1, - 850 Homes
Public Wholesale 4, - 13 Homes
Public Wholesale 5, - 10 Homes
PWSD 5, - 10 Homes
PWWS 13, - 0 Homes
Rice RWD 1, - 0 Homes
Shawnee Cons 2, - 273 Homes
Shawnee RWD 5, - 235 Homes
Shawnee RWD 8, - 2360 Homes
Sumner RWD 4, - 348 Homes
Sumner RWD 5, - 849 Homes
Sumner RWD 6, - 48 Homes
Topeka Airport Authority, - Homes
Wabaunsee RWD 1, - 230 Homes
Wabaunsee RWD 2, - 480 Homes
Walnut Water Dist, - 26 Homes
Washington RWD 2, - 387 Homes
Wildlife and Parks, - 2 Homes
Wilson RWD 10, - 160 Homes
Wilson RWD 11, - 270 Homes
Wilson RWD 9, - 210 Homes

Kentucky,- Adair County Water District, - 2745 Homes
Adairville Waterworks, - 407 Homes
Albany Municipal Water & Sewer, - 2850 Homes
Allen County Water District, - 1784 Homes
Alton Water & Sewer District, - 569 Homes
Arlington Water & Sewer, - 233 Homes
Auburn Water & Sewer, - 650 Homes
Auxier Water Company, - 700 Homes
Barbourville Water & Electric, - 4000 Homes
Bardstown, - 8890 Homes
Bardwell City Utilities, - 522 Homes
Barkley Lake Water District, - 3400 Homes
Beattyville Water Works, - 1300 Homes
Beaver Dam Municipal Water & Sewer, - 1400 Homes
Beaver Elkhorn Water District, - 2000 Homes
Beech Grove Water Works, - 365 Homes
Ben-de-field Water Assn., - 19 Homes
Benham Water & Sewer System, - 400 Homes
Benham Water Plant, - 400 Homes
Benton Water & Sewer, - 2076 Homes
Berea College Water Dept., - 2500 Homes
Big Sandy Water District, - 1600 Homes
Black Mountain Utility District, - 348 Homes
Bloomfield Water & Sewer, - 1100 Homes
Bonnieville Municipal Water, - 230 Homes
Boone Co. Water & Sewer District, - 7075 Homes
Boonesboro Water Assn.,Inc., - 1268 Homes
Booneville Water System, - 1100 Homes
Bracken Co. Water District #1, - 778 Homes
Brandenburg Water Works, - 620 Homes
Brodhead Water and Sewer Department, - 495 Homes
Bronston Water Association, - 850 Homes
Brooksville Water Works, - 375 Homes
Brownsville, City of, - 415 Homes
Buffalo Trail Water Assn., - 548 Homes
Bullock Pen Water District, - 2800 Homes
Burkesville Municipal Water Works, - 905 Homes
Burnside Municipal Water Works, - 585 Homes
Butler County Water System Inc., - 2351 Homes
Cadiz Water & Sewer System, - 1495 Homes
Caldwell County Water District, - 100 Homes
Calhoun Waterworks, - 524 Homes
Calvert City Municipa, - 1164 Homes
Campbellsburg Water Works, - 315 Homes
Campton, City of, - 788 Homes
Caneyville, City of, - 517 Homes
Kentucky, - Cannonsburg Water District, - 2608 Homes
Carlisle Water Dept., - 965 Homes
Carroll County Water District #1, - 1436 Homes
Carrollton Utilities, - 1510 Homes
Cave City Water, - 949 Homes
Cawood Water System, - 300 Homes
Centertown Water System, - 600 Homes
Central City Water & Sewer, - 2200 Homes
Christian County Water District, - 2417 Homes
Clay City Water Works, - 575 Homes
Cloverport Water & Sewer, - 582 Homes
Columbia Utilities Commission, - 1518 Homes
Consumers Water District, - 1260 Homes
Corinth Water District, - 304 Homes
Crab Orchard Water System, - 531 Homes
Crittenden-Livingston Co. WD, - 730 Homes
Crofton Water & Sewerage, - 560 Homes
Cumberland Falls Highway Water District, - 1164 Homes
Cynthiana, City of, - 2800 Homes
Dawson Springs Water & Sewer, - 1200 Homes
Dewitt Water District, - 211 Homes
Dexter-almo Heights Water District, - 375 Homes
Dixon, City of, - 370 Homes
Doe Valley Utilities, Inc., - 125 Homes

Drakesboro Water & Sewer, - 343 Homes
Dry Ridge, City of, - 463 Homes
E. Clark Co. WD, - 600 Homes
Earlington Water & Sewer Works, - 730 Homes
East Casey County Water District, - 1400 Homes
East Daviess County Water Association, - 2713 Homes

East Knox Co. Water District, - 1050 Homes
East Laurel County Water District, - 2478 Homes
East Logan Water District, - 1435 Homes
Eddyville Water Department, - 900 Homes
Edmonson Co. Water District, - 5582 Homes
Edmonton Water Works, - 1637 Homes
Elihu Rush Branch Water Assn., - 1000 Homes
Elihu-Tateville Water Assn., - 1800 Homes
Elk Lake Water, - 300 Homes
Elkhorn Water District, - 343 Homes
Elkton Water & Sewer, - 883 Homes
Eminence Water Works, - 893 Homes
Estill Co. Water District #1, - 2500 Homes
Evrts Municipal Water Works, - 653 Homes
Fancy Farm Water District, - 466 Homes
Fardale Water District, - 1500 Homes
Kentucky, - Flatwoods, City of, - 3000 Homes
Fleming Co. Water Assn., - 2201 Homes
Fordsville Water District, - 369 Homes
Fountain Run Water District, - 415 Homes
Francis Water Company, - 300 Homes
Frankfort Electric and Water, - 3000 Homes
Franklin Water and Sewer Commission, - 3900 Homes
Fredonia Water System, - 325 Homes
Frenchburg Water and Sewer, - 860 Homes
Fulton Municipal Water System, - 1781 Homes
Gallatin Co. Water District, - 460 Homes
Garrard Co Water Assn., - 2500 Homes
Garrison Quincy Water District, - 550 Homes
Georgetown Municipal Water, - 4800 Homes
Grand Rivers Waterworks, - 471 Homes
Grayson, City of, - 2915 Homes
Green Hills Water District, - 215 Homes
Green River Valley Water District, - 4518 Homes
Green-Taylor Water District, - 2965 Homes
Greensburg Water & Sewer Dept., - 1191 Homes
Greenup Water Department, - 1650 Homes
Greenville Utilities Commission, - 2050 Homes
Guthrie Water Works, - 789 Homes
Hanson Municipal Water System, - 380 Homes
Hardin Co. Water District #1, - 8292 Homes
Hardin Co. Water District #2, - 8654 Homes
Harinsburg, City of, - 2328 Homes
Harlan Municipal Water Works, - 2200 Homes
Harrison County Water Association, - 2785 Homes
Hartford Municipal Water & Sewer, - 1016 Homes
Hawesville Water Works, - 829 Homes
Henderson Co. Water District, - 4693 Homes
Hendron Water District, - 2020 Homes
Henry County Water District #2, - 4097 Homes
Hickory Water District, - 1119 Homes
Hillside Trailer Park, - 65 Homes
Hima-Sibert Water District, - 360 Homes
Hindman Water, - 302 Homes
Hodgenville Waterworks, - 1400 Homes
Horse Cave Water and Sewer, - 916 Homes
Huntsville South Hill Water System, - 198 Homes
Hustonville Water Works, - 1025 Homes
Hyden-leslie County Water District, - 1422 Homes
Irvine Municipal Utilities, - 2200 Homes
Irvington, City of, - 522 Homes
Island Water & Sewer Department, - 480 Homes
Kentucky, - Jackson Co. Water Assn., - 2643 Homes
Jackson Municipal Waterworks, - 2000 Homes
Jamestown Utilities, - 1800 Homes
Jeffersonville Water System, - 1050 Homes
Jenkins Water Dep tment, - 1000 Homes
Jessamine Co. Water District #1, - 691 Homes
Jonathan Creek Water Assn., - 1355 Homes
Judy Water Association, - 572 Homes
Junction City Water & Sewer, - 1100 Homes
Kenton Co. Water District #1, - 9000 Homes
Kingston-Terrill Water District, - 1660 Homes
Kirksville Water Association, - 1068 Homes
Kuttawa Water Department, - 372 Homes
Ky Turnpike Water District, - 4750 Homes
Lacenter, City of, - 468 Homes
Lake Village Water Assn., - 1505 Homes
Lancaster Water & Sewer, - 1500 Homes
Larue Co. Water District #1, - 1139 Homes
Laurel Co. Water District #2, - 2580 Homes
Lawrenceburg Water & Sewer, - 3300 Homes
Lebanon Junction Water Co., - 890 Homes
Ledbetter Water District, - 935 Homes
Leitchfield Water Works, - 2325 Homes
Levee Road Water Assn., - 497 Homes
Lewisburg Water Works, - 824 Homes
Lewisport Municipal Water System, - 745 Homes
Lexington-South Elkhorn Water District, - 1100

Homes
Liberty Water & Sewer, - 1000 Homes
Livermore, City of, - 707 Homes
Livingston Municipal Waterworks, - 210 Homes
London Utility Commission, - 3061 Homes
Lovelaceville Water Company, - 100 Homes
Lynch, City of, - 474 Homes
Lyon Co. Water District, - 894 Homes
Manchester Water Works, - 2200 Homes
Marion County Water District, - 2738 Homes
Marrowbone Water District, - 825 Homes
Martin Co. Water District #1, - 1400 Homes
Mayfield Electric/water System, - 3000 Homes
Maysville Utility Commission, - 4183 Homes
Mccreary County Water District, - 4700 Homes
Mckee Water Works, - 619 Homes
Mckinney Water District, - 1026 Homes
Meade Co. Water District, - 825 Homes
Midway Water Works, - 550 Homes
Milford Water Comapny, - 715 Homes
Kentucky, - Millersburg Municipal Waterworks, - 400 Homes
Milton Water & Sewer Dep tment, - 865 Homes
Monroe Co. Water District, - 1516 Homes
Montgomery Co. Water District #1, - 488 Homes
Monticello Water & Sewer Comm., - 3927 Homes
Morehead State University, - 1500 Homes
Morgan County Water District, - 350 Homes
Morganfield Water Works, - 1775 Homes
Morgantown Water System, - 805 Homes
Mortons Gap Water Works, - 504 Homes
Mt. Olivet, City of, - 256 Homes
Mt. Vernon, City of, - 1806 Homes
Mt. Washington Water & Sewer, - 3600 Homes
Muhlenberg Co. Water District, - 5000 Homes
Muldraugh, City of, - 283 Homes
Munfordville Municipa, - 646 Homes
Murray Water District #1, - 466 Homes
Murray Water District #2, - 185 Homes
Nebo Water District, - 1014 Homes
Nelson Valley Water Assn., - 1000 Homes
New Castle Water, - 420 Homes
New Haven, City of, - 478 Homes
Nicholas Co. Water District, - 455 Homes
Nicholasville Water Dep tment, - 1800 Homes
North Hopkins Water District, - 674 Homes
North Logan Water District, - 2753 Homes
North Manchester Water Association, - 889 Homes
North Marshall Water District, - 4000 Homes
North Mclean Co. Water District, - 953 Homes
North Mercer Water District, - 2225 Homes
North Middletown Water & Sewer, - 374 Homes
North Nelson Water District, - 2063 Homes
North Shelby Water Co., - 2663 Homes
Northeast Woodford Co. Water, - 589 Homes
Northern Rockcastle County Water District, - 556 Homes
Nortonville Water & Sewer, - 858 Homes
Oak Grove Water Dep tment, - 1574 Homes
Oak Hill Water Assn., - 191 Homes
Ohio Co. Water District, - 3400 Homes
Olive Hill Municipal Waterworks, - 2127 Homes
Owenton, City of, - 950 Homes
Paris Water & Sewer, - 2000 Homes
Park City Water Works, - 264 Homes
Parksville Water District, - 920 Homes
Peaks Mill Water District, - 705 Homes
Pembroke Water Works, - 260 Homes
Kentucky, - Perry Park Water System, - 203 Homes
Perryville Water Department, - 627 Homes
Pineville Water & Sewer, - 3200 Homes
Pleasant Hill Water District, - 1680 Homes
Powell's Valley Water District, - 1185 Homes
Prestonsburg City Utilities, - 2500 Homes
Princeton Water/wastewater, - 3370 Homes
Providence Municipal Utilities, - 1777 Homes
Pulaski Co. Water District #2, - 2532 Homes
Raceland Water Works, - 1195 Homes
Rattlesnake Ridge Water District, - 1032 Homes
Reid Village Water District, - 780 Homes
Reidland Water District, - 2496 Homes
Rochester Water District Inc., - 446 Homes
Rockcastle County Water Assn., - 230 Homes
Rockport Water Works, - 285 Homes
Rowan Water Inc., - 2504 Homes
Russellville Water & Wastewater, - 2753 Homes
Russell Springs Water & Sewer Works, - 1414 Homes

Russell Waterworks, - 2086 Homes
Sacramento Water & Sewer Works, - 650 Homes
Sadieville, City of, - 400 Homes
Salem Water Department, - 415 Homes
Salt Lick Water Assn., - 160 Homes
Salyersville Water Works, - 2000 Homes
Sandy Hook Water District, - 444 Homes
Sandy Valley Water District, - 1913 Homes

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Science Hill Water District, - 1014 Homes
Scottsville, City of, - 1368 Homes
Sebree Water & Sewer, - 565 Homes
Sedalia Water District, - 164 Homes
Sharpsburg Water District, - 1002 Homes
Shelbyville Water/Sewer Commission, - 1800 Homes
Sheperdsville Water Department, - 974 Homes
Slaughters Water Works, - 254 Homes
Smithland Water & Sewer System, - 285 Homes
Somerset Water Service, - 3300 Homes
South 641 Water District, - 315 Homes
South Anderson Water District, - 800 Homes
South Cumberland Water Dist., - 840 Homes
South Graves Co. Water District, - 838 Homes
South Hopkins Water District, - 2297 Homes
South Logan Water Assn. Inc., - 1161 Homes
South Shore Water Works Inc., - 492 Homes
South Side Water Assn. Inc., - 434 Homes
Southeast Daviess Co. Water Dist, - 4381 Homes
Kentucky, - Southeastern Water Assn., - 1468 Homes
Southern Madison Water District, - 2300 Homes
Southern Mason Water District, - 450 Homes
Springfield Water Works, - 1892 Homes
Stamping Ground Water Works, - 250 Homes
Stanford, City of, - 1844 Homes
Stanton, City of, - 1774 Homes
Stringtown Water District, - 231 Homes
Sturgis Water System, - 1501 Homes
Symsonia Water District, - 230 Homes
Taylorsville Water & Sewer, - 2500 Homes
Todd County Water District, - 1760 Homes
Tompkinsville, City of, - 1298 Homes
Trenton, City of, - 262 Homes
Tri-Village Water District, - 1100 Homes
Trimble Co. Water District #1, - 965 Homes
U. S. 60 Water District, - 1300 Homes
Union Co. Water District, - 1700 Homes
Uniontown Water Works, - 584 Homes
Vanceburg Utilities, - 1225 Homes
Vicco Water & Sewer, - 810 Homes
Vine Grove Water Dep tment, - 1350 Homes
Waco Water District, - 1950 Homes
Wallins Water Works, - 365 Homes
Walton, City of, - 778 Homes
Warren Co. Water District, - 14503 Homes
Warsaw Water Works, - 577 Homes
Webster Co. Water District, - 647 Homes
West Carroll Water District, - 643 Homes
West Daviess Co. Water Dist., - 3121 Homes
West Laurel Water Association, - 2816 Homes
West Liberty Water Works, - 751 Homes
West Marshall Water District, - 200 Homes
West Mccracken Water District, - 870 Homes
West Shelby Water District, - 800 Homes
Western Bracken Water Dist., - 400 Homes
Western Rockcastle Water Assn., - 1600 Homes
White Plains Water Works, - 435 Homes
Whitehall Water District, - 2001 Homes
Whitesburg Municipal Water Works, - 730 Homes
Whitesville Water Works, - 900 Homes
Whitley County Water District, - 1200 Homes
Wickliffe Water & Sewer Systems, - 540 Homes
Williamsburg Municipa, - 2050 Homes
Wilmore Water Dep tment, - 1371 Homes
Wingo Water & Sewer, - 298 Homes
Kentucky,- Wood Creek Water District, - 3509 Homes
Woodson Bend Resort, - 100 Homes
Wurtland Water District, - 455 Homes
Homes
Homes
Louisiana,- 4th Ward, - 650 Homes
Abbeville, - 2400 Homes
Abita Springs, - 550 Homes
Addis, - 850 Homes
Alanta Water Works, - 277 Homes
Albany, - 650 Homes
Amelia, - 1900 Homes
Anacoco Water Works, - 364 Homes
Arcadia Water Works, - 1200 Homes
Assumption #1, - 8000 Homes
Atlanta Water Works, - 277 Homes
Back Woods Water Works, - 189 Homes
Baldwin, - 400 Homes
Bayou Bonne Idee Water System, - 500 Homes
Bayou Macon Water Works, - 240 Homes
Bayou Teche, - 1100 Homes
Bealah-Fellowship Water System, - 350 Homes
Belle Vista Water Works, - 116 Homes
Benton Water System, - 1150 Homes
Bernice Water System, - 900 Homes
Berwick, - 1400 Homes
Better Water Works, - 500 Homes
Black River Water Works, - 296 Homes
Blanchard Water Works, - 3000 Homes
Bonita Water Works, - 220 Homes

Bonnidee W/S, - 421 Homes
Boyce Waater System, - 419 Homes
Breaux Bridge, - 1200 Homes
Broussard, - 1100 Homes
Buckeye Water District, - 2250 Homes
Bunkie, - 2000 Homes
Caddo District 7, - 810 Homes
Caddo Water District #1, - 1000 Homes
Calcasieu # 8, - 1500 Homes
Calhoun Water Works, - 122 Homes
Calvin Water Works, - 150 Homes
Cameron, - 920 Homes
Cameron # 11, - 915 Homes
Campti, - 450 Homes
Carencro, - 1300 Homes
Carlysa, - 1800 Homes
Louisiana,- Castor Water Works, - 140 Homes
Cecilia, - 2000 Homes
Centerville, - 1650 Homes
Central Water Works, - 185 Homes
Charenton, - 2200 Homes
Chatagnier, - 320 Homes
Chatham Water Works, - 350 Homes
Cheneyville Water System, - 330 Homes
Cheynne Drew Water Works, - 2800 Homes
City of Kaplan, - 930 Homes
City of Rayne, - 3000 Homes
City of Thibodeaux, - 4600 Homes
Clarence Water System, - 234 Homes
Clarks Water System, - 0 Homes
Clayton Water Works, - 350 Homes
Colfax Water Works, - 800 Homes
Columbia Heights Water, - 650 Homes
Concordia Water District 1, - 2000 Homes
Coteau, - 1335 Homes
Cotten Valley W/S, - 568 Homes
Cotton Plant Water System, - 202 Homes
Creole, - 400 Homes
Cresent Water Works, - 251 Homes
Creston Water Works, - 234 Homes
Cross Roads Water Works, - 166 Homes
Culbertson Water Works, - 730 Homes
Cullen Water System, - 630 Homes
Darlington Water System, - 115 Homes
Delcambre, - 800 Homes
Denham Springs, - 2500 Homes
Dennis Mills Water , - 230 Homes
Deridder, - 2400 Homes
Dist #2 St. Martin, - 590 Homes
District #11, - 840 Homes
District #13, - 2000 Homes
District 4, - 1300 Homes
District 7, - 860 Homes
Dixie Inn Water Works, - 180 Homes
Dixie Overland Water Works, - 330 Homes
Dodson Water Works, - 175 Homes
Dorcheat W/S Rate Study, - 132 Homes
Downsvill Water Works, - 75 Homes
Doyline Water Works, - 300 Homes
Dry Prong Water Works, - 240 Homes
Dubeck Water System, - 450 Homes
Dubberly Water System, - 316 Homes
Louisiana,- Duson, - 395 Homes
E Columbia Water Works, - 820 Homes
East Allen, - 625 Homes
East Central Vernon Water Works, - 1166 Homes
East Columbia Water System, - 700 Homes
East Desoto Water Works, - 450 Homes
East Jena Water Works, - 285 Homes
Ebenezer Water Works, - 89 Homes
Elizabeth Water Works, - 325 Homes
Epps Water Works, - 350 Homes
Erath, - 800 Homes
Eros Community Water System, - 168 Homes
Evangeline Parish # 1, - 600 Homes
Fellowship Water Works, - 200 Homes
Fenton, - 150 Homes
Fisk Union Water Works, - 500 Homes
Florida Parish, - 60 Homes
Florien Water Works, - 335 Homes
Four Corners, - 550 Homes
Fourth Ward Livingston, - 720 Homes
Franklin, - 2400 Homes
Friendship Water Works, - 225 Homes
Frost Town Water Works, - 240 Homes
Gardner Water Works, - 980 Homes
Garland Whitefield Water, - 250 Homes
Georgetown Water System, - 180 Homes
German Town Water Works, - 450 Homes
Gibsland Water Works, - 513 Homes
Gil-gal Water Works, - 200 Homes
Gilbert, - 275 Homes
Glenmora Water Works, - 650 Homes
Goldona Water Works, - 160 Homes
Gonzales, - 2400 Homes
Goodwill Water Works, - 460 Homes

Gramblin Water Works, - 2 Homes
Grand Chenier, - 900 Homes
Grayson Water Works, - 425 Homes
Greater Ward #1 Water Works, - 800 Homes
Green Acres, - 350 Homes
Greenbrair Prairie Water, - 240 Homes
Greenwood Water Works, - 979 Homes
Gross Tete, - 600 Homes
Gueydan, - 720 Homes
Hackberry, - 700 Homes
Harrisonburg Water System, - 300 Homes
Haughton Water Works, - 700 Homes
Louisiana,- Hayes Water, - 220 Homes
Haynesville Water System, - 1300 Homes
Hebert Water Works, - 570 Homes
Henderson, - 750 Homes
Hickory Grove Water System, - 177 Homes
Hineston Water Works, - 240 Homes
Hodge Water System, - 0 Homes
Holum Water System, - 250 Homes
Homer Water System, - 2000 Homes
Homesville Water System Water Test/bo d Meeting, - 560 Homes
Hornebeck Water Works, - 275 Homes
Hosston-Miro Water Works, - 276 Homes
Houston River, - 920 Homes
Houston River # 11, - 1000 Homes
Hwy 84 W Water Works, - 170 Homes
Iberville #2, - 2200 Homes
Iberville #3, - 1200 Homes
Iberville #4, - 395 Homes
Iberville Parish, - 300 Homes
Ida Water Works, - 164 Homes
Indian Village Water Works, - 291 Homes
Innis, - 600 Homes
Iota, - 740 Homes
Iron Removal New C rol W/s, - 675 Homes
Jeanerette,- 3800 Homes
Jeff Davis #4, - 640 Homes
Jeff Davis Centra, - 800 Homes
Jena Water System, - 1500 Homes
Jonesboro Water Works, - 2500 Homes
Jonesville Water Works, - 1104 Homes
Joyce Water Works, - 185 Homes
Kaplan, - 1600 Homes
Keatchie Water System, - 900 Homes
Kelly Water, - 325 Homes
Kentwood, - 900 Homes
Kolin-Ruby Wise, - 900 Homes
Krotz Springs, - 750 Homes
Lafourche, - 3000 Homes
Lake Bruin, - 200 Homes
Lake Providence Water Works, - 2400 Homes
Lasalle Dist 1 Water System, - 800 Homes
Lawtel, - 1200 Homes
Lebleu Settlement,- 1300 Homes
Lee Road W/S, - 2300 Homes
Lelland Water System, - 196 Homes
Lena Water System, - 900 Homes
Louisiana,- Leonville, - 1700 Homes
Lewisburg, - 1000 Homes
Liddieville Water Works, - 145 Homes
Livingston, - 850 Homes
Livonia, - 950 Homes
Logansport Water System, - 850 Homes
Lutcher, - 800 Homes
Lydia, - 500 Homes
Magnolia, - 750 Homes
Maitland Water System, - 230 Homes
Mamou, - 1400 Homes
Manifest Water Works, - 305 Homes
Maraquin, - 450 Homes
Marthaville Water Works, - 387 Homes
Martin Water System, - 350 Homes
Mcintyre Water Works, - 160 Homes
Melville, - 500 Homes
Mer Rouge Water System, - 425 Homes
Merryville, - 490 Homes
Mill Creek Water Works, - 107 Homes
Milton, - 760 Homes
Monterey Water Works, - 1441 Homes
Montgomery Water Works, - 500 Homes
Mooringsport Water Works, - 400 Homes
Morgan City, - 2500 Homes
Morganza, - 395 Homes
Morrow Water System, - 550 Homes
Morton Shop Water System, - 153 Homes
Moosville, - 590 Homes
Mt Calm Water Works, - 102 Homes
Mt Olive Water Works, - 375 Homes
N Franklin Water Works, - 1336 Homes
Natchitochea, - 800 Homes
Nebo Water Works, - 306 Homes
New Llano Water Works, - 995 Homes
New Orleans, - 100000 Homes
North Desota Water System, - 500 Homes

North Franklin W/S. - 1175 Homes
Oak Grove Water Works, - 1000 Homes
Oak Ridge Water Works, - 140 Homes
Olla Water Works, - 850 Homes
Opelousas, - 6300 Homes
Palmetto, - 540 Homes
Parish Point Coupee District #2, - 175 Homes
Parks, - 2500 Homes
Parrier Road W/s Tank Painting, - 756 Homes
Louisiana,- Patterson, - 1850 Homes
Pearl River, - 800 Homes
Pine Hill Water System, - 185 Homes
Pine Prairie, - 720 Homes
Pioneer Darnell W/s Worked on Pump, - 756 Homes
Pitkin W/S, - 260 Homes
Plain Dealing Water System, - 1000 Homes
Plaquemine, - 2500 Homes
Pleasant Ridge Water Works, - 127 Homes
Pleasant Valley Water Works, - 310 Homes
Poineer-Darnell Water Works, - 750 Homes
Pollock Area Water Works, - 685 Homes
Ponchatoula, - 1200 Homes
Port Allen, - 1800 Homes
Port Barre, - 1000 Homes
Pow Hatten Water Works, - 178 Homes
Prairie Road Water District, - 620 Homes
Prairie Ronde, - 720 Homes
Provencal Water Works, - 225 Homes
Pt. Blue, - 500 Homes
Pt. Coupee WD #1, - 175 Homes
Pumpkin Center Hill Top Water, - 450 Homes
Rapides Island Water Works, - 1387 Homes
Rapides Water District #3, - 4845 Homes
Rayville Water Works, - 1600 Homes
Red Gum Water Works, - 156 Homes
Red Hill Water System, - 502 Homes
Redell Vidrine Water, - 600 Homes
Redhil, - 500 Homes
Rhinehart Water Works, - 305 Homes
Ridgecrest Water Works, - 325 Homes
Ringgold Water Works, - 860 Homes
Robeline Marthaville W/S, - 365 Homes
Rodessa Water Works, - 141 Homes
Rogers Water Works, - 157 Homes
Rosedale, - 300 Homes
Rosefield Water System, - 435 Homes
Roseland, - 600 Homes
Rosepine Water Works, - 700 Homes
Rural Franklinton, - 725 Homes
S Bossier Water Works, - 435 Homes
S Mansfield Water Works, - 435 Homes
S.W. Allen, - 1300 Homes
Saline Water Works, - 120 Homes
Sandy Lake Water System, - 751 Homes
Sandy Point Water Works, - 155 Homes
Louisiana,- Savoy/Swords, - 750 Homes
Sibley Water Works, - 350 Homes
Sicily Island, - 300 Homes
Sieper Water Works, - 220 Homes
Sikes Water Works, - 107 Homes
Simsboro Water System, - 299 Homes
Simsport Water Works, - 375 Homes
Singer, - 1140 Homes
Slaughter, - 500 Homes
South East Hodge Water System, - 35 Homes
South Grant Water Syaltem, - 778 Homes
South Mansfield, - 546 Homes
South Ouachita Water Works, - 2127 Homes
Southwest Allen W/S, - 1250 Homes
Southwest Ouachita, - 1140 Homes
Spring Creek Water Works, - 82 Homes
St Joseph Water Works, - 600 Homes
St Mary Water Works, - 105 Homes
St Maurice Water Works, - 135 Homes
St Martin #2, - 620 Homes
St Martinville, - 2500 Homes
St Mary #5, - 2000 Homes
St Marys Water System, - 120 Homes
St Tammany #3, - 700 Homes
St Tammany #2, - 900 Homes
St Bernard W/D, - 2500 Homes
St Francisville, - 900 Homes
St Gabrie, - 800 Homes
St Helena, - 720 Homes
St James, - 1900 Homes
St John, - 1100 Homes
St Martinville, - 2400 Homes
Stanley Water System, - 147 Homes
Summerville Water Works, - 435 Homes
Sun, - 240 Homes
Sunset, - 650 Homes
Tangipahoa, - 210 Homes
Tangipahoa WD #2, - 4000 Homes
Tensas Water District Inc, - 974 Homes
Terrebone #1, - 10000 Homes
Thibodaux, - 2500 Homes

Third Ward Avoyelles, - 575 Homes
Tickfaw, - 450 Homes
Torbert, - 250 Homes
Town and Country Water Works, - 1500 Homes
Town of Anacoco Disenfection, - 370 Homes
Louisiana, - Town of Arnaudville, - 830 Homes
Town of Broussard, - 1600 Homes
Town of Chatham Water System, - 320 Homes
Town of Dodson Chlorination, - 110 Homes
Town of Elizabeth, - 325 Homes
Town of Florine, - 160 Homes
Town of Grand Coteau, - 1000 Homes
Town of Greenwood Water Works, - 1002 Homes
Town of Gueydan, - 800 Homes
Town of Harrisonburg W/S, - 575 Homes
Town of Iota, - 600 Homes
Town of Kentwood, - 1200 Homes
Town of Leonville, - 2000 Homes
Town of Livingston, - 1400 Homes
Town of Mamou, - 1196 Homes
Town of Maringouin, - 600 Homes
Town of Melville, - 720 Homes
Town of Olla, - 800 Homes
Town of Pitkin, - 250 Homes
Town of Rayville Water Works, - 1600 Homes
Town of St. Francisville, - 800 Homes
Town of Urania, - 350 Homes
Town of Vinton , - 1867 Homes
Town of Washington, - 700 Homes
Town of Welsh, - 1000 Homes
Town of Winnsboro Water, - 2300 Homes
Tullos Water System, - 325 Homes
Turkey Creek, - 1300 Homes
Union Springs Water Works, - 300 Homes
United Water, - 750 Homes
Urania Water System, - 350 Homes
Vacherie, - 1500 Homes
Village of Eros Water Works, - 100 Homes
Village of Fenton, - 150 Homes
Village of Gilbert , - 357 Homes
Village of Grayson Water Works, - 425 Homes
Village of Palmetto, - 680 Homes
Village of Rosedale, - 250 Homes
Ville Platte, - 1900 Homes
Vivian Water Works, - 1572 Homes
Vixen Water Works, - 212 Homes
Wabaton Rouge, - 700 Homes
W/W/D/# 4 , - 1927 Homes
W/W/D/#10 Discussed Operator Certification, - 827 Homes
W/W/D/#2 Cameron P ish New Computer Billing System, - 834 Homes
W/W/D/#3 Avoyelles Added Distribution System, - 576 Homes
Louisiana, - Walker, - 1200 Homes
Washington, - 600 Homes
Waterproof, - 700 Homes
West Allen W/s Worked on Evaluation of System, - 670 Homes
West Baton Rouge Parish, - 1500 Homes
West Feliciana #13, - 2200 Homes
West Winn Water Works, - 550 Homes
West Winnsboro Water Works, - 353 Homes
Westlake, - 1100 Homes
Westview, - 650 Homes
Wheeling Water Works, - 116 Homes
White Castle, - 800 Homes
White Hall Water System, - 162 Homes
Wilson, - 325 Homes
Winnfield Water Works, - 2900 Homes
Wisner Water System, - 580 Homes
Woodsworth Water Works, - 400 Homes
Zwolle Water Works, - 720 Homes
Homes
Homes
Maryland, - Barton, - 176 Homes
Berlin, - 872 Homes
Betterton, - 120 Homes
Boonsboro, - 615 Homes
Bowling Green, - 950 Homes
Brunswick, - 1705 Homes
Calvert County San., - 1845 Homes
Carlos, - 68 Homes
Carlos-Shaft, - 68 Homes
Carpenters Point, - 86 Homes
Cascade, - 615 Homes
Cecilton, - 163 Homes
Celanese Wwtp, - 4000 Homes
Centreville, - 699 Homes
Charles County, - 7000 Homes
Charlestown, - 192 Homes
Chesapeake Beach, - 801 Homes
Chesapeake City, - 245 Homes
Chesapeake Ranch, - 480 Homes
Chestertown, - 1381 Homes
Clear Spring, - 138 Homes

Crisfield, - 960 Homes
Delm , - 476 Homes
Denton, - 992 Homes
East New Market, - 51 Homes
Easton, - 3127 Homes
Maryland, - Elkton, - 3124 Homes
Emittsburg, - 562 Homes
Fairlee, - 62 Homes
Federalsburg, - 788 Homes
Fort Richie, - 303 Homes
Fortney Homes, - 102 Homes
Friendsville, - 192 Homes
Frostburg, - 2691 Homes
Fruitland, - 1170 Homes
Ft Ritchie, - 704 Homes
Funkstown, - 378 Homes
Galena, - 116 Homes
Garrett County Sanitary, - 580 Homes
Georges Creek, - 661 Homes
Gilmore, - 192 Homes
Grantsville, - 168 Homes
Greensboro, - 449 Homes
Hagerstown, - 5000 Homes
Hampstead, - 313 Homes
Hancock, - 642 Homes
Havre De Grace, - 2984 Homes
Hebron, - 222 Homes
Highfield Cascade, - 615 Homes
Hurlock, - 568 Homes
Indian Head, - 1177 Homes
Keedysville, - 155 Homes
Kent County Sanitary, - 600 Homes
Klondyke, - 191 Homes
La Plata, - 1947 Homes
Lavale, - 443 Homes
Leonardtown, - 491 Homes
Lexington Park, - 1172 Homes
Lonaconing, - 374 Homes
Manchester, - 940 Homes
Mechanicsville, - 300 Homes
Middletown, - 611 Homes
Midiothian, - 62 Homes
Midland, - 194 Homes
Mt Aetna, - 65 Homes
Mt Airy, - 1210 Homes
Myersville, - 0 Homes
New Market, - 109 Homes
New Windsor, - 252 Homes
North Beach, - 391 Homes
North East, - 638 Homes
Oakland, - 580 Homes
Maryland, - Ocean City, - 1715 Homes
Oxford, - 233 Homes
Perry Point, - 3244 Homes
Perryville, - 817 Homes
Pinto, - 87 Homes
Pittsville, - 200 Homes
Pocomoke, - 1569 Homes
Poolesville, - 1266 Homes
Port Deposit, - 274 Homes
Potomac Height, - 950 Homes
Preston, - 166 Homes
Prince Frederick, - 1860 Homes
Princess Anne, - 555 Homes
Queen Annes Sanitary, - 1857 Homes
Queenstown, - 151 Homes
Raising Sun, - 421 Homes
Rawlings, - 116 Homes
Ridgely, - 344 Homes
Rising Sun, - 421 Homes
Rock Hal, - 528 Homes
Rockville, - Homes
Rose Haven, - 491 Homes
Secretary, - 176 Homes
Sharpeburg, - 316 Homes
Sharptown, - 162 Homes
Smithburg, - 407 Homes
Snow Hil, - 739 Homes
St Mary's Metro, - 721 Homes
St. Michaels, - 433 Homes
Stevensville, - 171 Homes
Taneytown, - 1201 Homes
Thurmont, - 1132 Homes
Trappe, - 325 Homes
Turkey Hill Water Co, - 75 Homes
Union Bridge, - 303 Homes
Vienna, - 86 Homes
Walkersville, - 1715 Homes
Warton, - 168 Homes
Washington County Sanitary Dist., - 615 Homes
Westernport, - 818 Homes
Wicomic Shores, - 201 Homes
Willard, - 236 Homes
Williamport, - 701 Homes
Woodsboro, - 171 Homes
Worcester County, - 100 Homes

Homes
Homes
Maine, - Addison, - 63 Homes
Alfred, - 237 Homes
Allen, - 33 Homes
Andover, - 164 Homes
Anson, - 550 Homes
Ashland, - 315 Homes
Baileyville, - 609 Homes
Bath, - 3224 Homes
Belfast, - 1522 Homes
Berwick, - 638 Homes
Bethe, - 449 Homes
Bingham, - 507 Homes
Boothbay Harbor, - 2143 Homes
Brewer, - 3305 Homes
Bridgeton, - 671 Homes
Brownville, - 319 Homes
Buckfield, - 186 Homes
Bucksport, - 610 Homes
C.P. Wright Schoo, - Homes
Calais, - 1265 Homes
Camden, - 6574 Homes
Canton, - 131 Homes
Caribou, - 1861 Homes
Castine, - 353 Homes
CB Mattson, - Homes
Center for Learning, - 1 Homes
Chewonki, - Homes
Chick Orchards, - 1 Homes
Cives Stee, - 1 Homes
Clinton, - 407 Homes
Coastal Ventures, - 1 Homes
Cold Spring, - 50 Homes
Cornish, - 249 Homes
Danforth, - 146 Homes
Dexter, - 862 Homes
Dixfield, - 546 Homes
Dover Foxcroft, - 963 Homes
Eagle Lake, - 209 Homes
East Boothbay, - 557 Homes
East Millinocket, - 810 Homes
East Pittston, - Homes
East Vassalboro, - 80 Homes
Ellsworth, - 1200 Homes
Elm St. Schoo, - Homes
Elscott Corp., - 1 Homes
Exeter, - 25 Homes
Maine, - Fairground Apt., - 25 Homes
Farmington, - 1436 Homes
Farmington Falls, - 88 Homes
Fort Fairfield, - 804 Homes
Fort Kent, - 617 Homes
Franklin, - 170 Homes
Freeport, - 25 Homes
Friendly Village, - 25 Homes
Fryburg, - 563 Homes
Gardiner, - 3021 Homes
Gouldsboro Elementary, - 1 Homes
Grand Isle, - 167 Homes
Gray, - 817 Homes
Great Salt Bay, - 524 Homes
Greenville, - 459 Homes
Guilford-Sangerville, - 644 Homes
Hallowel, - 715 Homes
Hampden, - 1300 Homes
Harrington, - 42 Homes
Harrison, - 262 Homes
Hartland, - 42 Homes
Hawthorn House, - Homes
Hebron, - 23 Homes
Hedgehog Village, - 0 Homes
Howland, - 500 Homes
Island Falls, - 237 Homes
Jackman, - 378 Homes
Jay Village, - 306 Homes
Jones MHP, - 15 Homes
Kingfield, - 338 Homes
Knights Hil, - 205 Homes
Lake Arrowhead, - 450 Homes
Lake Region High Schoo, - 1 Homes
Lee Winn Schoo, - 1 Homes
Limerick, - 207 Homes
Limestone, - 388 Homes
Lincoln, - 1100 Homes
Lisbon, - 2090 Homes
Livermore Falls, - 1806 Homes
Long Pond, - 162 Homes
Lubec, - 658 Homes
Lucerne, - 80 Homes
Madawaska, - 1115 Homes
Madison, - 1186 Homes
Maine Wild Blueberry, - 1 Homes
Maine Yankee, - 1 Homes
Maine, - Maple StreetTrailer Park, - 43 Homes
M S Hil, - 590 Homes

Mechanic Falls, - 560 Homes
Mexico, - 941 Homes
Milbridge, - 205 Homes
Millinocket, - 2133 Homes
Milo, - 744 Homes
Monmouth, - 185 Homes
Monson, - 155 Homes
Morril, - 42 Homes
Mountainside Mobile Home Park, - 34 Homes
Mt. Abrams, - Homes
Muskegoma C.G., - 98 Homes
Narragauset Estates, - 45 Homes
New Portland, - 56 Homes
Newport, - 575 Homes
Norridgewock, - 355 Homes
North Berwick, - 456 Homes
North Haven, - 284 Homes
North Jay, - 235 Homes
North New Portland, - 56 Homes
Northeast Harbor, - 476 Homes
Northland Plaza, - Homes
Northport Village Corp., - 231 Homes
Norway, - 826 Homes
Oak Hil, - 99 Homes
Old Town, - 2943 Homes
Orono-Veazie, - 1653 Homes
Oxford, - 300 Homes
Paris, - 988 Homes
Passamaquoddy, - 1021 Homes
Patten, - 186 Homes
Penobecot, - 47 Homes
Phillips Water, - 261 Homes
Pine Brook Apartments, - 35 Homes
Pineland, - 25 Homes
Pittsfield, - 1047 Homes
Presque Isle, - 2144 Homes
Quantabacook, - 145 Homes
Rangely Water District, - Homes
Richmond, - 522 Homes
Rumford, - 1748 Homes
Sabattus, - 391 Homes
Sad 74, - 25 Homes
Seal Harbor, - 293 Homes
Searsmont, - 16 Homes
Maine, - Searsport, - 790 Homes
Sebago Harbor Shores, - 25 Homes
Sebasco Lodge, - 660 Homes
Skowhegan, - 1886 Homes
Solon, - 166 Homes
South Berwick, - 1075 Homes
South Freeport, - 235 Homes
South Paris, - 988 Homes
Southport, - 398 Homes
Southwest Harbor, - 695 Homes
St. Francis, - 62 Homes
Stonington, - 225 Homes
Strong, - 208 Homes
Sunday River, - 345 Homes
Tex Tech Industries, - 1 Homes
Trenton Elementary, - 1 Homes
Unity Utility District, - Homes
Van Buren, - 982 Homes
Vinalhaven, - 392 Homes
Waldoboro, - 295 Homes
Ward Town, - Homes
Washburn, - 306 Homes
Waterford Elementary, - 1 Homes
White Tail Ridge, - 28 Homes
Wilton, - 880 Homes
Winterport, - 267 Homes
Winthrop, - 922 Homes
Wiscasset, - 338 Homes
Woodland Acres, - 18 Homes
Yarmouth, - 2364 Homes
York, - 4300 Homes
Homes
Homes
Michigan, - Ada Twp, - 1000 Homes
Augres Twp, - 25 Homes
Augusta Twp, - 100 Homes
Baldwin Twp, - 30 Homes
Bangor Twp, - 650 Homes
Barry Twp, - 0 Homes
Bedford Twp, - 400 Homes
Beecher Diane M.H.P, - 139 Homes
Benton Twp, - 1800 Homes
Benzonia Twp, - 0 Homes
Bergland Twp, - 130 Homes
Bessimer Twp, - 450 Homes
Big Rapids Twp, - 0 Homes
Michigan, - Birch Run Twp, - 110 Homes
Blackman Twp, - 200 Homes
Brietung Twp., - 200 Homes
Brighton Twp, - 25 Homes
Burr Oak Village, - 244 Homes
Burt Township, - 120 Homes

Butman Twp, - 0 Homes
Cadliac Frozen Services, - 3000 Homes
Caledonia Twp, - 0 Homes
Canton-Vanburen Authority, - 100 Homes
Cedar Lake, - 40 Homes
Channing, - 200 Homes
Charlotte, - 3300 Homes
Chassell Twp, - 325 Homes
Chippewa Twp, - 0 Homes
City of Adrian, - 3300 Homes
City of Alma, - 3300 Homes
City of Auburn, - 550 Homes
City of Augres, - 475 Homes
City of Beaverton, - 465 Homes
City of Belding, - 1700 Homes
City of Belleville, - 775 Homes
City of Bellevue, - 510 Homes
City of Benton Harbor, - 3400 Homes
City of Bessemer, - 725 Homes
City of Big Rapids, - 2700 Homes
City of Brighton, - 3000 Homes
City of Bronson, - 940 Homes
City of Cadillac, - 2857 Homes
City of Caseville, - 698 Homes
City of Charlevoix, - 1600 Homes
City of Chesaning, - 900 Homes
City of Clare, - 1500 Homes
City of Coldwater, - 3000 Homes
City of Coleman, - 500 Homes
City of Crystal Falls, - 1000 Homes
City of Dewitt, - 500 Homes
City of Dundee, - 980 Homes
City of Durand, - 1425 Homes
City of East Tawas, - 1407 Homes
City of Eaton Rapids, - 1736 Homes
City of Empire, - 100 Homes
City of Essexville, - 1168 Homes
City of Evart, - 600 Homes
City of Fennville, - 516 Homes
City of Flatrock, - 2000 Homes
Michigan, - City of Fremont, - 990 Homes
City of Galesburg, - 700 Homes
City of Gobles, - 233 Homes
City of Grant, - 150 Homes
City of Grayling, - 512 Homes
City of Greenville, - 2700 Homes
City of Hart, - 550 Homes
City of Hartford, - 712 Homes
City of Hesperia, - 420 Homes
City of Howel, - 1993 Homes
City of Hudson, - 950 Homes
City of Ionia, - 2750 Homes
City of Iron Mt., - 2435 Homes
City of Iron River, - 1750 Homes
City of Ironwood, - 3000 Homes
City of Ithaca, - 875 Homes
City of Kingsford, - 2600 Homes
City of L'anse, - 904 Homes
City of Lainsburg, - 0 Homes
City of Lake City, - 500 Homes
City of Lake Odessa, - 850 Homes
City of Leslie, - 720 Homes
City of Litchfield, - 355 Homes
City of Lowel, - 1139 Homes
City of Luna Pier, - 552 Homes
City of Mackinac Island, - 715 Homes
City of Manistee, - 2800 Homes
City of Manistique, - 1100 Homes
City of Manton, - 305 Homes
City of Marshal, - 2700 Homes
City of Mason, - 1876 Homes
City of Mcbain, - 150 Homes
City of Memphis, - 375 Homes
City of Milan, - 1350 Homes
City of Monroe, - 3300 Homes
City of Montigue, - 1000 Homes
City of Montrose, - 530 Homes
City of Muskegon Heights, - 3300 Homes
City of New Baltimore, - 2100 Homes
City of Newago, - 500 Homes
City of Newaygo, - 500 Homes
City of North Muskegon, - 1200 Homes
City of Norton Shores, - 3300 Homes
City of Norway, - 800 Homes
City of Novi, - 3200 Homes
City of Olivet, - 540 Homes
Michigan, - City of Omer, - 130 Homes
City of Otsego, - 1428 Homes
City of Parchment, - 1000 Homes
City of Perry, - 700 Homes
City of Petersburg, - 360 Homes
City of Potterville, - 592 Homes
City of Reading, - 345 Homes
City of Reed City, - 800 Homes
City of Richmond, - 1500 Homes
City of Rockford, - 1200 Homes

City of Saline, - 2000 Homes
City of Sheridan, - 187 Homes
City of South Haven, - 1600 Homes
City of South Lyon, - 2100 Homes
City of Springfield, - 1300 Homes
City of St. Ignace, - 520 Homes
City of St. Johns, - 2104 Homes
City of St. Joseph, - 3300 Homes
City of St. Louis, - 830 Homes
City of Standish, - 520 Homes
City of Stanton, - 311 Homes
City of Swartz Creek, - 1600 Homes
City of Tawas City, - 574 Homes
City of Tecumseh, - 2560 Homes
City of Wakefield, - 740 Homes
City of Waterollet, - 800 Homes
City of Webberville, - 454 Homes
City of West Branch, - 750 Homes
City of White Cloud, - 700 Homes
City of Whitehal, - 1450 Homes
City of Williamston, - 860 Homes
City of Wixom, - 1525 Homes
City of Zeeland, - 1892 Homes
City of Zilwaukee, - 750 Homes
Clare, - 840 Homes
Clement Twp, - 0 Homes
Coldwater Lake Auth, - 150 Homes
Colonial Acres Twp, - 150 Homes
Concord Twp, - 850 Homes
Cottrellville Twp, - 450 Homes
Crystal Falls, - 430 Homes
Delhi Twp, - 2500 Homes
Dewitt Twp, - 250 Homes
Diorite Twp, - 65 Homes
District No. 1-Pineview, - 83 Homes
Elkton, - 333 Homes
Michigan, - Elsie, - 692 Homes
Emmett Twp, - 900 Homes
Empire Twp, - 0 Homes
Erie Twp, - 610 Homes
Escanaba, - 3000 Homes
Evart, - 498 Homes
Filer Twp, - 360 Homes
Fowler, - 333 Homes
Fraser Twp, - 525 Homes
Frenchtown Twp, - 850 Homes
Frutiport Twp, - 1945 Homes
Fulton Twp, - 0 Homes
Gaines Twp, - 1300 Homes
Garfield Twp, - 1200 Homes
Gaylord, - 975 Homes
Georgetown Twp, - 2500 Homes
Germfask Twp, - 75 Homes
Gladwin, - 433 Homes
Glen Arbor Twp, - 0 Homes
Gogebic Range Water Authority, - 1600 Homes
Grand Traverse Co, - 6000 Homes
Grass Lake Twp, - 1 Homes
Greenfield Pt. Twp, - 120 Homes
Greenwood, - 132 Homes
Gun Lake Auth, - 100 Homes
Gun Plain Twp, - 270 Homes
Hagar Twp, - 50 Homes
Hamilton Area Water Authority, - 1 Homes
Haring Twp, - 52 Homes
Harrison, - 487 Homes
Hay Twp, - 0 Homes
Hemitite Twp, - 75 Homes
Highland, - 700 Homes
Highland Twp, - 250 Homes
Holly, - 1467 Homes
Holton Twp, - 0 Homes
Homer Twp, - 0 Homes
Houghton Lake, - 2800 Homes
Howell Twp, - 4 Homes
Huron Twp, - 900 Homes
Imlay City, - 1150 Homes
Iron River, - 693 Homes
Ironwood, - 2146 Homes
Isabella Co., - 200 Homes
Ishpeming City, - 2800 Homes
Ithaca, - 933 Homes
Michigan, - Kal. Lake Water Authority, - 1300 Homes
Kawkawlin Twp, - 500 Homes
Kinross Twp, - 600 Homes
Kockville Twp, - 500 Homes
Lach Alpine San Auth, - 400 Homes
Lake rowhead, - 64 Homes
Lake Bella Vista, - 750 Homes
Lake Co, - 0 Homes
Lake George, - 530 Homes
Lake Miramichi, - 135 Homes
Lake Side Estates (Cty), - 38 Homes
Lake Twp, - 0 Homes
Lasalle Twp, - 1077 Homes

Lawton, - 740 Homes
Leelanau Co, - 0 Homes
Lenawee Co. Drain Comm, - 164 Homes
Leoni Twp, - 450 Homes
Lincoln Twp, - 1200 Homes
Lind, - 287 Homes
Linwood Metro Water, - 300 Homes
Loch Alpine Sanitary, - 400 Homes
Lowell Twp, - 3 Homes
Mackinaw City, - 700 Homes
Manistee, - 2400 Homes
Manistique, - 1285 Homes
Mannor Farm, - 68 Homes
Manton, - 331 Homes
Maple Rapids, - 235 Homes
Marenisco Twp, - 415 Homes
Marion, - 308 Homes
Marshal, - 3300 Homes
Mattawan, - 612 Homes
Mcmillian Twp, - 150 Homes
Mesick Village, - 180 Homes
MHO W & W Auth, - 6500 Homes
Middleton, - 0 Homes
Midland Co. Water Dist., - 2000 Homes
Milford, - 1575 Homes
Moran Township, - 60 Homes
Mt. Pleasant, - 3333 Homes
Muskegon Co. , - 3300 Homes
Napoleon Twp, - 0 Homes
Negaunee Twp, - 356 Homes
Northfield Twp, - 0 Homes
Oakland Twp, - 1500 Homes
Olivet, - 458 Homes
Michigan, - Omer, - 130 Homes
Onekama Village, - 0 Homes
Oshtemo Twp, - 421 Homes
Otsego Twp, - 20 Homes
Ottawa Co. , - 200 Homes
Oxford Twp, - 650 Homes
Paw Paw, - 1053 Homes
Pennfield Twp, - 840 Homes
Perrinton, - 173 Homes
Pinecrest, - 1 Homes
Pineview Subdivision, - 120 Homes
Pittsfield Twp, - 5000 Homes
Plainfield Twp, - 7500 Homes
Plainwel, - 1667 Homes
Port Austin, - 236 Homes
Portage Lake Sewer Auth, - 300 Homes
Potterville, - 435 Homes
Ramsay, - 150 Homes
Ranch Homes Est-Leoni Twp, - 400 Homes
Reed City, - 683 Homes
Republic, - 300 Homes
Richfield Twp-St. Helen, - 0 Homes
Richland Twp, - 500 Homes
Rollin Woodstock, - 0 Homes
Roosevelt P k, - 1250 Homes
Roscommon, - 1086 Homes
Roylton Twp, - 900 Homes
Rudyard Twp, - 50 Homes
S Clinton Mua, - 2833 Homes
Saginaw-Midland Plant, - 10 Homes
Sagola/Channing, - 200 Homes
SCCMUA, - 520 Homes
Scio Twp, - 500 Homes
Secord Twp, - 0 Homes
Seney Twp, - 25 Homes
Shepherd, - 438 Homes
Sheridan Twp, - 0 Homes
Silver Lake System, - 60 Homes
Sims Twp, - 300 Homes
Sims Whitney Auth, - 800 Homes
So. Barry Co Water Auth, - 0 Homes
Solon Twp, - 0 Homes
South Haven Twp, - 0 Homes
Spaulding Twp, - 6 Homes
Spring Arbor Twp, - 250 Homes
Spring Lake Twp, - 2048 Homes
Michigan, - Springfield, - 1594 Homes
St. Johns, - 1733 Homes
St. Ignace, - 752 Homes
St. Johns, - 1733 Homes
St. Joseph Twp, - 1200 Homes
Standish, - 387 Homes
Summit Twp, - 1200 Homes
Sumpter Twp, - 300 Homes
Superior Twp, - 250 Homes
Swan Lake, - 25 Homes
Tamouth Twp, - 120 Homes
Tawas City, - 505 Homes
Tecumseh, - 2200 Homes
Tekonsha Twp, - 5 Homes
Tillicum Farms Sub, - 30 Homes
Tobacco Twp, - 0 Homes
Townline, - 103 Homes

Union Twp, - 537 Homes
Unionville, - 200 Homes
Village of Union City, - 500 Homes
Village of Broklyn, - 458 Homes
Village of Milford, - 1823 Homes
Village of Addison, - 300 Homes
Village of Akron, - 200 Homes
Village of Ashley, - 125 Homes
Village of Athen, - 275 Homes
Village of Augusta, - 275 Homes
Village of Baldwin, - 240 Homes
Village of Bear Lake, - 350 Homes
Village of Bellevue, - 510 Homes
Village of Benzonia, - 210 Homes
Village of Beulah, - 130 Homes
Village of Bloomingdale, - 0 Homes
Village of Breckenridge, - 430 Homes
Village of Brooklyn, - 458 Homes
Village of Burch Run, - 850 Homes
Village of Caledonia, - 120 Homes
Village of Carsonville, - 250 Homes
Village of Caseville, - 280 Homes
Village of Central Lake, - 500 Homes
Village of Centreville, - 410 Homes
Village of Chelsea, - 1090 Homes
Village of Climax, - 260 Homes
Village of Colon, - 400 Homes
Village of Concord, - 1000 Homes
Village of Constantine, - 650 Homes
Michigan, - Village of Copper City, - 90 Homes
Village of Dansville, - 0 Homes
Village of Decatur, - 540 Homes
Village of Deerfield, - 350 Homes
Village of Dundee, - 980 Homes
Village of Edmore, - 650 Homes
Village of Elk Rapids, - 900 Homes
Village of Ellsworth, - 150 Homes
Village of Elsie, - 520 Homes
Village of Fairgrove, - 0 Homes
Village of Fenton, - 2412 Homes
Village of Fowler, - 404 Homes
Village of Freeport, - 142 Homes
Village of Gagetown, - 120 Homes
Village of Grass Lake, - 320 Homes
Village of Hersey, - 0 Homes
Village of Holly, - 1700 Homes
Village of Homer, - 512 Homes
Village of Hopkins, - 0 Homes
Village of Howard City, - 400 Homes
Village of Kalkaska, - 800 Homes
Village of Kent City, - 0 Homes
Village of Lakeview, - 451 Homes
Village of Lakewood Club, - 0 Homes
Village of Lawrence, - 230 Homes
Village of Lawton, - 400 Homes
Village of Lyons, - 176 Homes
Village of Mackinaw City, - 400 Homes
Village of Manchester, - 481 Homes
Village of Manton, - 350 Homes
Village of Maple Rapids, - 155 Homes
Village of Marcellus, - 500 Homes
Village of Marion, - 285 Homes
Village of Mattawan, - 360 Homes
Village of Milford, - 1823 Homes
Village of Muir, - 264 Homes
Village of Nashville, - 465 Homes
Village of North Port, - 383 Homes
Village of Northport, - 383 Homes
Village of Ovid, - 500 Homes
Village of Owendale, - 110 Homes
Village of Pentwater, - 652 Homes
Village of Perrinton, - 130 Homes
Village of Pewamo, - 185 Homes
Village of Pigeon, - 344 Homes
Village of Powers, - 223 Homes
Michigan, - Village of Quincy, - 600 Homes
Village of Reading, - 345 Homes
Village of Richland, - 150 Homes
Village of Roscommon, - 450 Homes
Village of Sand Lake, - 110 Homes
Village of Saranac, - 480 Homes
Village of Schoolcraft, - 388 Homes
Village of Shelby, - 534 Homes
Village of Shepherd, - 440 Homes
Village of Springport, - 291 Homes
Village of Stambaugh, - 412 Homes
Village of Sterling, - 0 Homes
Village of Suttons Bay, - 175 Homes
Village of Tekonsha, - 35 Homes
Village of Thompsonville, - 118 Homes
Village of Union City, - 500 Homes
Village of Unionville, - 170 Homes
Village of Vermontville, - 280 Homes
Village of Vicksburg, - 760 Homes
Village of Westphelia, - 275 Homes
Village of White Pigeon, - 550 Homes

Village Pierson, - 0 Homes
Village of Mendon, - 375 Homes
Vulcan, - 300 Homes
Waterford Twp, - 3300 Homes
Watersmeet Twp, - 150 Homes
West Branch Twp, - 17 Homes
West Traverse Twp, - 0 Homes
Wexford , - 83 Homes
White Pigeon Twp, - 0 Homes
Whitney Twp, - 500 Homes
Williams Twp, - 800 Homes
Williamston, - 894 Homes
Homes
Homes
Minnesota,- Ada, - 488 Homes
Adams, - 218 Homes
Adrian, - 326 Homes
Aitkin, - 485 Homes
Akeley, - 112 Homes
Albany, - 451 Homes
Albertville, - 424 Homes
Alden, - 178 Homes
Alexandria, - 2315 Homes
Alpha, - 46 Homes
Appleton, - 443 Homes
Minnesota,- Argyle, - 182 Homes
Arlington, - 542 Homes
Ashby, - 134 Homes
Askov, - 98 Homes
Audubon, - 120 Homes
Aurora, - 561 Homes
Avon, - 277 Homes
Backus, - 69 Homes
Badger, - 109 Homes
Barnesville, - 590 Homes
Barnum, - 140 Homes
Bass Brook, - 563 Homes
Battle Lake, - 204 Homes
Baudette, - 329 Homes
Baxter, - 1132 Homes
Beaver Bay, - 42 Homes
Beaver Creek, - 70 Homes
Becker, - 287 Homes
Belgrade, - 200 Homes
Belle Plaine, - 900 Homes
Bellechester, - 44 Homes
Bellingham, - 71 Homes
Beltrami, - 39 Homes
Belview, - 109 Homes
Big Falls, - 95 Homes
Big Lake, - 922 Homes
Bigelow, - 65 Homes
Bingham Lake, - 42 Homes
Bird Island, - 379 Homes
Blackduck, - 210 Homes
Blomkest, - 52 Homes
Bovey, - 189 Homes
Bowlus, - 74 Homes
Boyd, - 70 Homes
Brainerd, - 3552 Homes
Brandon, - 126 Homes
Breckenridge, - 1060 Homes
Breitung Township, - 266 Homes
Bricelyn, - 122 Homes
Brook Park, - 37 Homes
Brooten, - 168 Homes
Browerville, - 222 Homes
Browns Valley, - 228 Homes
Brownton, - 223 Homes
Buckman, - 58 Homes
Buh, - 261 Homes
Minnesota,- Campbel, - 65 Homes
Canby, - 522 Homes
Cannon Falls, - 966 Homes
Carlos, - 104 Homes
Carlton, - 264 Homes
Carver, - 216 Homes
Cass Lake, - 264 Homes
Center City, - 138 Homes
Centerville, - 562 Homes
Chatfield, - 666 Homes
Chisago City, - 582 Homes
Chisholm, - 1504 Homes
Circle Pines, - 1365 Homes
Claremont, - 151 Homes
Clarissa, - 182 Homes
Clarkfield, - 284 Homes
Clearwater, - 171 Homes
Clements, - 53 Homes
Clinton, - 164 Homes
Coleraine, - 297 Homes
Cologne, - 162 Homes
Cook, - 194 Homes
Cottonwood, - 281 Homes
Crookston, - 2320 Homes
Crosby, - 598 Homes

Currie, - 85 Homes
Cyrus, - 94 Homes
Dasse, - 309 Homes
Dawson, - 465 Homes
Deerwood, - 150 Homes
Detroit Lakes, - 2070 Homes
Dilworth, - 753 Homes
Dodge Center, - 558 Homes
Donnelly, - 64 Homes
Dunnel, - 53 Homes
Eagle Lake, - 496 Homes
East Grand Forks, - 2525 Homes
East Gull Lake, - 196 Homes
Easton, - 65 Homes
Echo, - 87 Homes
Eden Valley, - 209 Homes
Elbow Lake, - 340 Homes
Elgin, - 213 Homes
Elko, - 66 Homes
Ellsworth, - 165 Homes
Ely, - 1128 Homes
Minnesota, - Elysian, - 128 Homes
Evansville, - 162 Homes
Eyota, - 423 Homes
Fairfax, - 365 Homes
Fairmont, - 3230 Homes
Farmington, - 1697 Homes
Felton, - 60 Homes
Fertile, - 246 Homes
Floodwood, - 162 Homes
Foley, - 551 Homes
Foreston, - 101 Homes
Fountain, - 93 Homes
Franklin, - 6 Homes
Frazee, - 333 Homes
Freeport, - 161 Homes
Frost, - 65 Homes
Fulda, - 355 Homes
Garfield, - 55 Homes
Gaylord, - 553 Homes
Georgetown, - 31 Homes
Ghent, - 89 Homes
Gilbert, - 547 Homes
Glencoe, - 1328 Homes
Glenwood, - 737 Homes
Glyndon, - 246 Homes
Gonvick, - 85 Homes
Good Thunder, - 162 Homes
Granada, - 107 Homes
Grand Meadow, - 279 Homes
Granite Falls, - 881 Homes
Green Isle, - 85 Homes
Greenbush, - 229 Homes
Grey Eagle, - 102 Homes
Grygla, - 63 Homes
Hackensack, - 70 Homes
Hallock, - 374 Homes
Halstad, - 172 Homes
Hamburg, - 143 Homes
Hammond, - 59 Homes
Hampton, - 110 Homes
Hancock, - 203 Homes
Hanley Falls, - 70 Homes
Hanska, - 127 Homes
Hardwick, - 67 Homes
Harmony, - 308 Homes
Harris, - 253 Homes
Minnesota, - Hayfield, - 367 Homes
Hector, - 327 Homes
Henderson, - 215 Homes
Henning, - 210 Homes
Herman, - 139 Homes
Heron Lake, - 223 Homes
Hill City, - 134 Homes
Hinckley, - 270 Homes
Hitterda, - 68 Homes
Hoffman, - 182 Homes
Hollandale, - 83 Homes
Holloway, - 35 Homes
Houston, - 293 Homes
Hoyt Lakes, - 671 Homes
Hugo, - 1381 Homes
Ihlen, - 27 Homes
Iona, - 44 Homes
Isle, - 164 Homes
Jackson, - 1017 Homes
Jasper, - 171 Homes
Jeffers, - 128 Homes
Joint Powers Water System, - 857 Homes
Jordan, - 861 Homes
Karlstad, - 252 Homes
Kasson, - 1056 Homes
Keewatin, - 319 Homes
Kelliher, - 99 Homes
Kellogg, - 122 Homes
Kennedy, - 94 Homes

Kensington, - 84 Homes
Kerkhoven, - 210 Homes
Kiester, - 170 Homes
Kimbal, - 197 Homes
Kinney, - 71 Homes
Kittson Marshall Rural Water, - 328 Homes
La Crescent, - 4410 Homes
Lafayette, - 132 Homes
Lake City, - 1257 Homes
Lake Crysta, - 606 Homes
Lake Elmo, - 1704 Homes
Lake Wilson, - 91 Homes
Lakefield, - 480 Homes
Lakeland, - 571 Homes
Lamberton, - 279 Homes
Le Center, - 592 Homes
Minnesota, - Le Roy, - 258 Homes
Lehillier, - 162 Homes
Lincoln Pipestone Rural Water, - 1283 Homes
Lindstrom, - 723 Homes
Lino Lakes, - 2873 Homes
Lismore, - 69 Homes
Litchfield, - 1737 Homes
Little Falls, - 2123 Homes
Long Lake, - 570 Homes
Long Prairie, - 806 Homes
Lonsdale, - 370 Homes
Loretto, - 126 Homes
Lowry, - 65 Homes
Luverne, - 1252 Homes
Lyle, - 143 Homes
Lynd, - 89 Homes
Mabe, - 213 Homes
Madison, - 552 Homes
Mahnomen, - 333 Homes
Maple Lake, - 402 Homes
Maple Plain, - 593 Homes
Mapleton, - 447 Homes
Mapleview, - 57 Homes
Marshal, - 3436 Homes
Marshall Polk Rural Water, - 995 Homes
Mc Gregor, - 0 Homes
Mc Intosh, - 194 Homes
Medford, - 214 Homes
Medina, - 980 Homes
Melrose, - 740 Homes
Menahga, - 306 Homes
Middle River, - 81 Homes
Milaca, - 650 Homes
Milan, - 101 Homes
Millville, - 45 Homes
Milroy, - 86 Homes
Minneota, - 405 Homes
Montevideo, - 1571 Homes
Monticello, - 1476 Homes
Moose Lake, - 391 Homes
Morgan, - 278 Homes
Morris, - 1604 Homes
Morristown, - 233 Homes
Morton, - 128 Homes
Motley, - 126 Homes
Mountain Lake, - 545 Homes
Minnesota, - Myrtle, - 19 Homes
Nashua, - 16 Homes
Nevis, - 110 Homes
New Auburn, - 103 Homes
New Germany, - 104 Homes
New London, - 277 Homes
New Market, - 64 Homes
New Richland, - 343 Homes
Newfolden, - 97 Homes
Newport, - 1073 Homes
Nicollet, - 230 Homes
North Kittson Rural Water, - 619 Homes
North Mankato, - 2904 Homes
North Redwood, - 58 Homes
Northrop, - 80 Homes
Norwood, - 386 Homes
Odessa, - 44 Homes
Ogilvie, - 148 Homes
Oklee, - 123 Homes
Olivia, - 749 Homes
Onamia, - 193 Homes
Ormsby, - 45 Homes
Orr, - 74 Homes
Ortonville, - 630 Homes
Osakis, - 357 Homes
Oslo, - 103 Homes
Ostrander, - 78 Homes
Otisco, - 1 Homes
Park Rapids, - 832 Homes
Parkers Prairie, - 272 Homes
Paynesville, - 852 Homes
Pelican Rapids, - 540 Homes
Pequot Lakes, - 866 Homes
Pierz, - 295 Homes

Pillager, - 87 Homes
Pine City, - 775 Homes
Pine Island, - 607 Homes
Pipestone, - 1307 Homes
Plainview, - 800 Homes
Preston, - 438 Homes
Ranier, - 57 Homes
Rapidan Development Company, - 61 Homes
Red Lake Falls, - 424 Homes
Red Rock Rural Water, - 416 Homes
Rice, - 183 Homes
Rock County Rural Water, - 453 Homes
Minnesota, - Rogers, - 199 Homes
Rollingstone, - 206 Homes
Rose Creek, - 105 Homes
Roseau, - 728 Homes
Rosemount, - 2463 Homes
Rothsay, - 127 Homes
Round Lake, - 133 Homes
Royalton, - 231 Homes
Rushford, - 455 Homes
Rushmore, - 108 Homes
Russel, - 113 Homes
Ruthton, - 95 Homes
Sanborn, - 131 Homes
Sartel, - 1679 Homes
Sauk Centre, - 1023 Homes
Sauk Rapids, - 2465 Homes
Savage, - 3364 Homes
Scanlon, - 251 Homes
Sebeka, - 186 Homes
Shingabee, - 14 Homes
Shorewood, - 1806 Homes
Silver Bay, - 532 Homes
Silver Lake, - 218 Homes
Slayton, - 615 Homes
Sleepy Eye, - 1057 Homes
South Haven, - 55 Homes
Spring Grove, - 352 Homes
Spring Lake Park, - 1885 Homes
Spring Valley, - 699 Homes
Springfield, - 621 Homes
St. Bonifacius, - 340 Homes
St. Charles, - 800 Homes
St. Clair, - 182 Homes
St. Francis, - 725 Homes
St. Hilaire, - 85 Homes
St. James, - 1247 Homes
Stacy, - 318 Homes
Staples, - 791 Homes
St Buck, - 327 Homes
Stockton, - 151 Homes
Strandquist, - 26 Homes
Swanville, - 92 Homes
Taunton, - 49 Homes
Taylors Falls, - 206 Homes
Thief River Falls, - 2287 Homes
Tower, - 140 Homes
Minnesota, - Tracy, - 586 Homes
Trosky, - 34 Homes
Tyler, - 359 Homes
Ulen, - 159 Homes
Underwood, - 80 Homes
Vergas, - 82 Homes
Vesta, - 86 Homes
Victoria, - 762 Homes
Wabasso, - 195 Homes
Waconia, - 999 Homes
Wadena, - 1212 Homes
Waldorf, - 69 Homes
Walker, - 271 Homes
Walnut Grove, - 178 Homes
Walters, - 24 Homes
Waltham, - 48 Homes
Wanamingo, - 247 Homes
Warroad, - 482 Homes
Watertown, - 702 Homes
Watkins, - 245 Homes
Watson, - 59 Homes
Waverly, - 170 Homes
Welcome, - 228 Homes
Wells, - 699 Homes
West Concord, - 249 Homes
Westbrook, - 244 Homes
Wheaton, - 457 Homes
Wilmont, - 100 Homes
Windom, - 1224 Homes
Winger, - 47 Homes
Winnebago, - 449 Homes
Winsted, - 461 Homes
Winthrop, - 368 Homes
Wood Lake, - 116 Homes
Woodstock, - 44 Homes
Worthington, - 2891 Homes
Wrenshal, - 86 Homes
Wright County, - 0 Homes

Wykoff, - 141 Homes
Wyoming, - 654 Homes
Young America, - 396 Homes
Zumbro Falls, - 69 Homes
Homes
Homes
Homes
Missouri, - Adrian, - 625 Homes
Advance, - 500 Homes
Alba, - 220 Homes
Alton, - 589 Homes
Missouri, - Anderson, - 673 Homes
Arrow Rock, - 70 Homes
Asbury, - 104 Homes
Ashgrove, - 539 Homes
Ashland, - 415 Homes
Atlanta, - 190 Homes
Audrain County Pwsd #1, - 480 Homes
Aurora, - 3400 Homes
Auxvasse, - 385 Homes
Ava, - 1500 Homes
Barnard, - 121 Homes
Belle, - 600 Homes
Benton, - 288 Homes
Bevier, - 410 Homes
Birch Tree, - 353 Homes
Bismark, - 825 Homes
Blackwater, - 125 Homes
Bland, - 300 Homes
Bloomsfield, - 825 Homes
Bogard, - 123 Homes
Bolckow, - 83 Homes
Bolivar , - 2630 Homes
Bourbon, - 599 Homes
Bowling Green, - 1335 Homes
Branson, - 2000 Homes
Brookfield, - 2300 Homes
Buffalo, - 1375 Homes
Burlington Jct., - 286 Homes
C#2 Lafayette/John/Saline, - 1700 Homes
C-PWSD #1B Ton County, - 2432 Homes
Caboo, - 801 Homes
Calhoun, - 250 Homes
Callao, - 183 Homes
Camdenton, - 1172 Homes
Cameron, - 2300 Homes
Campbel, - 1300 Homes
Canton, - 845 Homes
Carl Junction, - 775 Homes
Carrollton, - 2117 Homes
Carterville, - 770 Homes
Caruthersville, - 2500 Homes
Cass County Pwsd #7, - 1800 Homes
Cassville, - 1360 Homes
Cedarview Apartments, - 16 Homes
Chillicothe, - 3739 Homes
Clark, - 120 Homes
Missouri, - Clever, - 288 Homes
Clinton, - 4200 Homes
Cole Camp, - 525 Homes
Collins, - 94 Homes
Creighton, - 123 Homes
Crocker, - 526 Homes
Cross Timbers, - 85 Homes
Cuba, - 1200 Homes
Desoto, - 1980 Homes
Diggins, - 154 Homes
Doniphan, - 990 Homes
Dora Rill Schools, - 8 Homes
Drexe, - 399 Homes
Dudley, - 110 Homes
Duenweg, - 450 Homes
Eagleville, - 100 Homes
East Prairie, - 1485 Homes
Eastwind, - 16 Homes
El Dorado Springs, - 1812 Homes
Eldon, - 1200 Homes
Ellington, - 484 Homes
Ellsinore, - 248 Homes
Eureka, - 1100 Homes
Exeter, - 292 Homes
Fair Play, - 238 Homes
Fayette, - 1320 Homes
Fordland, - 240 Homes
Forrest City, - 100 Homes
Forsyth, - 573 Homes
Freeman, - 205 Homes
Gainesville, - 325 Homes
Galena, - 232 Homes
Gallatin, - 529 Homes
Garden City, - 576 Homes
Gerald, - 501 Homes
Glasgow, - 641 Homes
Golden City, - 450 Homes
Goodman, - 425 Homes
Gower, - 452 Homes

Graham, - 102 Homes
Grain Valley, - 610 Homes
Granby, - 853 Homes
Grandin, - 111 Homes
Grant City, - 530 Homes
Green Castle, - 143 Homes
Greenfield, - 722 Homes
Missouri, - Greenville, - 130 Homes
Greenwood, - 800 Homes
Hallsville, - 315 Homes
Halltown, - 65 Homes
Hamilton, - 800 Homes
Hardin, - 336 Homes
Harrisonville, - 2591 Homes
Hartville, - 305 Homes
Hawk Point, - 180 Homes
Henrietta, - 180 Homes
Henry County Water Company, - 4300 Homes
Hermann, - 1430 Homes
Hermitage, - 250 Homes
Hillsboro, - 900 Homes
Holden, - 1019 Homes
Hollister, - 1500 Homes
Houston, - 1097 Homes
Huntsville, - 690 Homes
Ironton, - 675 Homes
Jackson County Pwsd #12, - 560 Homes
Jackson County Pwsd #15, - 1800 Homes
Jackson County Pwsd #2, - 850 Homes
Jameson, - 77 Homes
Jamesport, - 350 Homes
Jasper, - 462 Homes
Kahoka, - 1025 Homes
Kimberling City, - 900 Homes
Koshkonong, - 120 Homes
Labelle, - 340 Homes
Laclede, - 210 Homes
Lagrange, - 450 Homes
Lake Viking, - 300 Homes
Lake Winnebago, - 317 Homes
Lam , - 2086 Homes
Lanagan - 180 Homes
Lancaster, - 450 Homes
Laplata, - 723 Homes
Lathrop, - 784 Homes
Laurie, - 200 Homes
Lawson, - 800 Homes
Leadington, - 100 Homes
Leeton, - 330 Homes
Libera, - 400 Homes
Licking, - 633 Homes
Lilbourn, - 656 Homes
Lincoln, - 428 Homes
Missouri, - Linn Creek, - 91 Homes
Macon, - 2333 Homes
Madison, - 278 Homes
Malden, - 2270 Homes
Mansfield, - 600 Homes
Marceline, - 1281 Homes
Marshal, - 4300 Homes
Marshfield, - 1815 Homes
Marston, - 308 Homes
Marthasville, - 220 Homes
Matthews, - 300 Homes
Maysville, - 567 Homes
Mayview, - 142 Homes
Mercer, - 248 Homes
Merriam Woods, - 300 Homes
Milan, - 826 Homes
Mill Spring, - 120 Homes
Miller, - 405 Homes
Mindenmines, - 161 Homes
Miner, - 398 Homes
Monett, - 2943 Homes
Monroe City, - 1129 Homes
Mound City, - 700 Homes
Mountain Grove, - 1862 Homes
Mt. View, - 895 Homes
Naylor, - 363 Homes
Neelyville, - 150 Homes
Neosho, - 4100 Homes
New Franklin, - 415 Homes
New Haven, - 723 Homes
Nixa, - 2000 Homes
Noe, - 403 Homes
North Jefferson City, - 26 Homes
North Lilbourn, - 49 Homes
Norwood, - 194 Homes
Novinger, - 285 Homes
Oran, - 560 Homes
Oregon, - 691 Homes
Oronogo, - 240 Homes
Orrick, - 350 Homes
Osbourn, - 143 Homes
Osceola, - 440 Homes
Owensville, - 1346 Homes

Ozark, - 1970 Homes
Pacific, - 1430 Homes
Palmyra, - 1348 Homes
Missouri, - Peculi , - 715 Homes
Perryville, - 2580 Homes
Piedmont, - 1300 Homes
Pierce City, - 600 Homes
Pilot Knob, - 401 Homes
Pineville, - 335 Homes
Platte County Pwsd #7, - 518 Homes
Plattsburg, - 1049 Homes
Pleasant Hil, - 1603 Homes
Point Look out, - 200 Homes
Potosi, - 1082 Homes
Princeton, - 633 Homes
Purcel, - 140 Homes
Purdy, - 500 Homes
Puxico, - 400 Homes
Pwsd #1 Adair County, - 2201 Homes
Pwsd #1 Adrain County, - 467 Homes
Pwsd #1 Andrew County, - 1250 Homes
Pwsd #1 Barry County, - 300 Homes
Pwsd #1 Boone County, - 910 Homes
Pwsd #1 Butler County, - 2295 Homes
Pwsd #1 Caldwell County, - 160 Homes
Pwsd #1 Callaway County, - 2200 Homes
Pwsd #1 Camdenton County, - 148 Homes
Pwsd #1 Carrol, - 860 Homes
Pwsd #1 Carter, - 140 Homes
Pwsd #1 Clark County, - 1710 Homes
Pwsd #1 Cole County, - 3400 Homes
Pwsd #1 Cooper Cty, - 153 Homes
Pwsd #1 Dent, - 332 Homes
Pwsd #1 Dunklin County, - 990 Homes
Pwsd #1 Franklin Cty, - 799 Homes
Pwsd #1 Greene County, - 1090 Homes
Pwsd #1 Grundy, - 1320 Homes
Pwsd #1 Henry County, - 90 Homes
Pwsd #1 Hickory County, - 91 Homes
Pwsd #1 Howard County, - 445 Homes
Pwsd #1 Howell County, - 230 Homes
Pwsd #1 Jasper County, - 1400 Homes
Pwsd #1 Johnson, - 820 Homes
Pwsd #1 Knox Cty, - 1500 Homes
Pwsd #1 Laclede County, - 2400 Homes
Pwsd #1 Macon County, - 3490 Homes
Pwsd #1 Mcdonald County, - 400 Homes
Pwsd #1 Mercer, - 555 Homes
Pwsd #1 Montgomery County, - 710 Homes
Missouri, - Pwsd #1 Morgan Cty, - 200 Homes
Pwsd #1 Newton County, - 154 Homes
Pwsd #1 Oregon, - 98 Homes
Pwsd #1 Ozark, - 258 Homes
Pwsd #1 Pemiscot Cty, - 2379 Homes
Pwsd #1 Perry, - 523 Homes
Pwsd #1 Pike County, - 1243 Homes
Pwsd #1 Pulaski County, - 1004 Homes
Pwsd #1 Putnam County, - 845 Homes
Pwsd #1 Ralls County, - 1725 Homes
Pwsd #1 Randolph County, - 2803 Homes
Pwsd #1 Ripley County, - 1000 Homes
Pwsd #1 Schuyler, - 900 Homes
Pwsd #1 Scotland County, - 1200 Homes
Pwsd #1 Ste. Genevieve, - 1237 Homes
Pwsd #1 Stoddard Cty, - 711 Homes
Pwsd #1 Stone Cty, - 552 Homes
Pwsd #1 Sullivan County, - 1188 Homes
Pwsd #1 Taney, - 467 Homes
Pwsd #1 Texas County, - 643 Homes
Pwsd #1 Wayne County, - 50 Homes
Pwsd #1 Worth Cty, - 350 Homes
Pwsd #1 Wright County, - 230 Homes
Pwsd #10 Boone County, - 1155 Homes
Pwsd #10 Cass County, - 454 Homes
Pwsd #10 Jefferson County, - 1696 Homes
Pwsd #13 Jackson County, - 1050 Homes
Pwsd #15 Jackson Cty, - 1985 Homes
Pwsd #16 Jackson Cty, - 500 Homes
Pwsd #17 Jackson County, - 667 Homes
Pwsd #2 Andrew County, - 1140 Homes
Pwsd #2 Audrain Cty, - 588 Homes
Pwsd #2 Bates County, - 283 Homes
Pwsd #2 Butler County, - 325 Homes
Pwsd #2 Caldwell County, - 194 Homes
Pwsd #2 Callaway, - 2812 Homes
Pwsd #2 Camden, - 275 Homes
Pwsd #2 Camdenton County, - 275 Homes
Pwsd #2 Cape Girardeau, - 328 Homes
Pwsd #2 Christian County, - 450 Homes
Pwsd #2 Cole County, - 3400 Homes
Pwsd #2 Harrison County, - 1100 Homes
Pwsd #2 Henry County, - 420 Homes
Pwsd #2 Howel, - 284 Homes
Pwsd #2 Jefferson County, - 2775 Homes
Pwsd #2 Johnson County, - 2100 Homes
Missouri, - Pwsd #2 Laclede County, - 137 Homes

Pwsd #2 Lafayette, - 1700 Homes
Pwsd #2 Miller County, - 272 Homes
Pwsd #2 Phelps Cty, - 600 Homes
Pwsd #2 Pulaski County, - 1169 Homes
Pwsd #2 Ripley County, - 498 Homes
Pwsd #2 St. Charles County, - 6600 Homes
Pwsd #2 Taney County, - 800 Homes
Pwsd #2 Texas County, - 452 Homes
Pwsd #2 Vernon Cty, - 225 Homes
Pwsd #3 Butler County, - 1089 Homes
Pwsd #3 Cape Girardeau, - 150 Homes
Pwsd #3 Clinton County, - 800 Homes
Pwsd #3 Franklin, - 1859 Homes
Pwsd #3 Jefferson County, - 5000 Homes
Pwsd #3 Johnson County, - 421 Homes
Pwsd #3 Laclede, - 2000 Homes
Pwsd #3 Linn County, - 839 Homes
Pwsd #3 Pulaski County, - 326 Homes
Pwsd #3 Taney, - 300 Homes
Pwsd #4 Boone County, - 1650 Homes
Pwsd #4 Clinton, - 1010 Homes
Pwsd #4 Henry County, - 0 Homes
Pwsd #4 Texas, - 710 Homes
Pwsd #5 Bates Cty, - 690 Homes
Pwsd #5 Stoddard Cty, - 200 Homes
Pwsd #6 Jefferson Cty, - 1980 Homes
Pwsd #7 Boone County, - 700 Homes
Pwsd #7 Cass County, - 1300 Homes
Pwsd #7 Jefferson, - 1660 Homes
Pwsd #7 Platte County, - 501 Homes
Pwsd #8 Jefferson County, - 875 Homes
Pwsd #9 Boone County, - 2585 Homes
Pwsd #9 Cass County, - 1461 Homes
Pwsd#1 Montgomery Cty, - 910 Homes
Quail Run, - 50 Homes
Qulin, - 220 Homes
Reeds Spring, - 291 Homes
Republic, - 2250 Homes
Rich Hil, - 750 Homes
Richland, - 850 Homes
Richmond, - 2500 Homes
Rock Port, - 750 Homes
Rockaway, - 278 Homes
Rogersville, - 340 Homes
Savannah, - 1731 Homes
Missouri, - Seligman, - 336 Homes
Seymour, - 650 Homes
Shelbina, - 990 Homes
Skidmore, - 210 Homes
Slater, - 1170 Homes
Southern Hills Pwsd, - 21 Homes
Southwest City, - 327 Homes
Sparta, - 285 Homes
Spring Valley Estates, - 110 Homes
St. Clair, - 1329 Homes
St. James, - 1375 Homes
St. Roberts, - 1750 Homes
Stafford, - 437 Homes
Ste. Genevieve, - 1832 Homes
Steelville, - 850 Homes
Stella, - 100 Homes
Stover, - 450 Homes
Strafford, - 437 Homes
Sturgeon, - 399 Homes
Sullivan, - 2357 Homes
Sunrise, - 150 Homes
Taney Utilities, - 300 Homes
Tarkio, - 824 Homes
Terre De Lac, - 830 Homes
Thayer, - 1087 Homes
Thomas Hill Pwsd #1, - 2803 Homes
Trenton, - 2975 Homes
Troy, - 2207 Homes
Truesdale, - 220 Homes
Union, - 2021 Homes
Unionville, - 1170 Homes
Urbana, - 177 Homes
Urich, - 225 Homes
Van Buren, - 475 Homes
Vienna, - 300 Homes
Warrenton, - 1500 Homes
Warsaw, - 810 Homes
Washburn, - 290 Homes
Wayland, - 180 Homes
Waynesville, - 1200 Homes
Weaubleau, - 282 Homes
Wentzville, - 1430 Homes
Wheatland, - 220 Homes
Wheaton, - 300 Homes
Willard, - 640 Homes
Williamsville, - 240 Homes
Missouri, - Willow Springs, - 1200 Homes
Winona, - 550 Homes
Wright City, - 833 Homes
Wyatt, - 395 Homes
Wyconda, - 184 Homes

Wsd #2 Pulaski Cty, - 1169 Homes
Homes
Homes
Mississippi,- Abe Inc, - 784 Homes
Aberdeen Water Department, - 3200 Homes
Acl Water Assn, - 790 Homes
Acona Water Association, - 425 Homes
Adams County Water Assn., - 5005 Homes
Alcorn Water Association, - 1750 Homes
Algoma Water Assn, - 1437 Homes
Anchor Water Assn, - 350 Homes
Arlington Water Assn, - 350 Homes
Arnold Line Water Assn, - 1120 Homes
Asl Water Association, - 214 Homes
B.C.Cowart & Tippo , - 429 Homes
Barrontown Utility, - 1500 Homes
Beat III Greene Co. Water Assn, - 1050 Homes
Beaver Meadows Water Assn, - 500 Homes
Beaverdam Water Assn, - 685 Homes
Belen Water Assn, - 44 Homes
Bellefontaine Water Association, - 190 Homes
Bethlehem Water Assn., - 200 Homes
Bexley Utility, - 310 Homes
Bi County Water Assn, - 290 Homes
Big Black Water Association, - 1200 Homes
Big Creek Water Assn, - 210 Homes
Big V Water Assn, - 1200 Homes
Black Bayou Water Assn, - 400 Homes
Blackland Water Assn, - 300 Homes
Bleakhouse Water Assn, - 150 Homes
Blue Lake Water Assn, - 100 Homes
Boggan Ridge Water Assn, - 780 Homes
Bogue Basin Water & Sewer, - 3000 Homes
Bond Water Association, - 410 Homes
Bouge Basin Water District, - 3000 Homes
Boyle Skene Water Assn, - 226 Homes
Brazil Sumner Water Assn, - 130 Homes
Broadmoor Utilities, - 460 Homes
Brooklyn Utility, - 675 Homes
Buckatunna Water Assn, - 1215 Homes
Bunker Hill Water Assn, - 430 Homes
C S & I Water Assn, - 330 Homes
Mississippi,- Cadaretta Water Assn, - 162 Homes
Caledonia Water & Sewer, - 1196 Homes
Calhoun Water Assn, - 1060 Homes
Cameron Community Water Assn, - 130 Homes
Canebrake Utility, - 185 Homes
Cannonsburg Church Hill Water, - 265 Homes
Carson Central Water Assn, - 123 Homes
Casey Jones Water Assn, - 380 Homes
Cason Water District, - 1144 Homes
Center Ridge Water Assn, - 587 Homes
Central Water Assn, - 5353 Homes
Central Yazoo Water Assn, - 2050 Homes
Centreville Water Assn., - 200 Homes
Charleston Utilities, - 1500 Homes
City of Aberdeen, - 3200 Homes
City of Amory, - 3818 Homes
City of Baldwyn, - 1200 Homes
City of Batesville, - 2800 Homes
City of Brookhaven, - 3300 Homes
City of Bruce, - 1084 Homes
City of Carthage, - 1630 Homes
City of Collins, - 940 Homes
City of Corinth, - 5000 Homes
City of Durant, - 1200 Homes
City of Ellisville, - 1350 Homes
City of Eupora, - 1586 Homes
City of Fayette, - 800 Homes
City of Fulton, - 2800 Homes
City of Hazlehurst, - 2150 Homes
City of Hernando, - 1385 Homes
City of Hollandale, - 1250 Homes
City of Holly Springs, - 2346 Homes
City of Houston, - 1680 Homes
City of Iuka, - 1275 Homes
City Of Kosciusko, - 2800 Homes
City of Lucedale, - 1020 Homes
City of Madison, - 2000 Homes
City of Mound Bayou, - 800 Homes
City of Natchez, - 7889 Homes
City of New Augusta, - 295 Homes
City of Olive Branch, - 2855 Homes
City of Pass Christian, - 2789 Homes
City of Peta, - 2700 Homes
City of Philadelphia, - 3183 Homes
City of Pontotoc, - 2300 Homes
City of Poplarville, - 860 Homes
Mississippi,- City of Purvis, - 990 Homes
City of Quitman, - 1100 Homes
City of Ridgeland, - 4000 Homes
City of Rolling Fork, - 945 Homes
City of Sardis, - 1125 Homes
City of Senatobia, - 1941 Homes
City of Starkville, - 6800 Homes
City of Tylertown, - 870 Homes

City of Water Valley, - 1560 Homes
City of Waveland, - 2400 Homes
City Point Water Assn, - 772 Homes
Clara Water Assn, - 565 Homes
Clarkdale Water Assn, - 1025 Homes
Cold Springs Water Assn, - 220 Homes
Coles Community Water Assn, - 275 Homes
Collinsville Water Assn, - 650 Homes
Combined Utilities, - 750 Homes
Community Water Association, - 95 Homes
Conehoma Water Association, - 855 Homes
Copiah New Zion Water Assn, - 940 Homes
Crooked Creek Water Assn, - 780 Homes
Crossroads Water Assn.//new Sys., - 3000 Homes
Crowder Water & Sewer, - 322 Homes
Crystal Springs Water Service, - 2414 Homes
Culkin Water District, - 3500 Homes
Cumberland Water Assn, - 187 Homes
D'iberville Water & Sewer, - 2200 Homes
Darling Water Assn, - 81 Homes
Davenport Water Assn, - 29 Homes
Delta City Utility, - 76 Homes
Delta State University, - 50 Homes
Dennis Water Assn, - 1170 Homes
Dixie Community Water Assn, - 1040 Homes
Dixie Land & Water Company, - 80 Homes
Dixie Utility, - 995 Homes
Double Ponds Water Assn, - 995 Homes
Dumas Pine Grove Water Assn, - 570 Homes
Dundee Water Assn, - 498 Homes
Durant Water Assn, - 1100 Homes
Eagle Lake Utility District, - 500 Homes
East Leflore Water & Sewer, - 1350 Homes
East Oxford Water Assn, - 324 Homes
East Pike Water Assn, - 350 Homes
East Port Showdown Water Assn, - 252 Homes
East Quitman Water Assn, - 1150 Homes
Eastabutchie Utiltiy, - 400 Homes
Mississippi, - Edinburg Rural Water Assn, - 468 Homes
Elc Water Association, - 500 Homes
Erata Water Assn, - 260 Homes
Ethel Rural Water Assn, - 120 Homes
Farmington Water Assn, - 2111 Homes
Farrell Water Assn, - 85 Homes
Fern Hill Water Assn, - 30 Homes
Fisher Ferry Water Dist., - 1400 Homes
FMH Water Association, - 950 Homes
Foxworth Water Assn, - 260 Homes
Franklin County Water Assn, - 1150 Homes
Freeny Water Assn, - 1500 Homes
French Camp Academy, - 260 Homes
French Rural Water Assn, - 680 Homes
Friars Point Water Dept., - 444 Homes
Gaines Trace Water Assn, - 235 Homes
Gautier Utility, - 4600 Homes
Glendale Utility District, - 1145 Homes
Golden Water Assn, - 560 Homes
Good Hope Water Assn, - 600 Homes
Goss Water Association, - 185 Homes
Greenfield Water Assn, - 310 Homes
Gulf Park Estates, - 1000 Homes
Gunnison Water Dept., - 300 Homes
Guntown Water Department, - 627 Homes
Hamilton Water District, - 1165 Homes
Hancock Co., - 26 Homes
Harmontown Water Assn, - 460 Homes
Harmony Central Water Assn, - 252 Homes
Harrisville Water Association, - 535 Homes
Hatten Water Assn, - 350 Homes
Hayes Creek Water Assn, - 800 Homes
Hidden Valley Water Assn, - 40 Homes
Hide a Way Lake Club, - 700 Homes
Hilldale Water District, - 1500 Homes
Hilton Heights Water Assn, - 335 Homes
Hiwannee Water Assn, - 1330 Homes
Hokut Cairo Water Assn, - 821 Homes
Holly Bluff Water Assn, - 70 Homes
Homestead Water Assn, - 440 Homes
Hopewell Water Assn, - 213 Homes
Horn Lake Water Assn, - 1300 Homes
Houlka Houston Water Assn, - 445 Homes
Hub Water Assn, - 800 Homes
Humphreys County Water Assn, - 1100 Homes
Hurricane Hill Water Assn, - 35 Homes
Mississippi, - Improve Water Assn, - 650 Homes
Ingram Water Assn, - 285 Homes
J-P Utility, - 1500 Homes
Keownville Rural Water Assn, - 693 Homes
Kiln Water & Fire District, - 520 Homes
Koko Reef Water Assn, - 200 Homes
Lake City Water Assn, - 637 Homes
Lake David Water Assn, - 120 Homes
Lamar Park Water & Sewer Assn, - 1060 Homes
Lawrence County Water Assn, - 720 Homes
Leesburg Water Assn, - 965 Homes

Lilly Rose Water Assn, - 1000 Homes
Lincoln Rural Water, - 3800 Homes
Looxahoma Water Assn, - 198 Homes
Lorena Lemons Burns Water Assn, - 310 Homes
Lorman Waterworks Assn, - 500 Homes
Love Joy Water Assn, - 200 Homes
Magee's Creek Water Assn, - 1725 Homes
Magnolia Rural Water Assn, - 770 Homes
Malouf's Trailer P k, - 100 Homes
Mantachie Water Assn, - 650 Homes
Mary Springs Water Assn, - 330 Homes
Marydell Water Assn, - 410 Homes
Mccallum Water Assn, - 50 Homes
Mccool Water Association, - 240 Homes
Mclaurin Utility, - 250 Homes
Mcnair Stampley Water Assn, - 900 Homes
Meritta Water Assn, - 280 Homes
Metcalfe Water Dept, - 400 Homes
Midway Pleasant Hill Water Assn, - 835 Homes
Midway Water Association, - 515 Homes
Minerals Wells Water Assn, - 600 Homes
Minter City Water Assn, - 120 Homes
Mitchell Water Assn, - 290 Homes
Monterey Water Assn, - 720 Homes
Moon Lake Water Assn, - 250 Homes
Mooreville Richmond Water Assn, - 2500 Homes
Moselle Water Assn, - 750 Homes
Mt Olive Water Assn, - 300 Homes
Mt Zion Water Association, - 43 Homes
Mt. Comfort Water Assn, - 1450 Homes
Mt. Gilead Improve Water Assn, - 810 Homes
Multi Mart Water Assn, - 400 Homes
Murry Spur Water Assn, - 350 Homes
N.E. Amite Water Assn, - 315 Homes
N.E. Copiah Water Assn, - 825 Homes
Mississippi, - N.E. Itawamba Water Assn, - 1363 Homes
N.E. Jeff Davis Water Assn, - 890 Homes
NE Perry Water Association, - 730 Homes
Neely Utilities, - 125 Homes
Nesbit Water Assn, - 610 Homes
New Candler Water Assn, - 425 Homes
New Hebron Water & Sewer, - 235 Homes
New Hope Water Assn, - 795 Homes
New Site Water Assn, - 366 Homes
New Zion Utility, - 325 Homes
Nicholson Water & Sewer, - 560 Homes
Noranco Utility, - 1140 Homes
North Central Amite Water Assn, - 670 Homes
North Covington Water Assn, - 1050 Homes
North Decatur Water Assn., - 400 Homes
North Hinds Water Assn, - 2050 Homes
North Lamar Water Assn, - 1700 Homes
North Lumberton Water Assn, - 1220 Homes
North Pike Water Assn, - 945 Homes
North Tallahatchie , - 700 Homes
Northeast Amite Water Assn, - 330 Homes
Northeast Perry Water Assn, - 709 Homes
NTS Utility, - 1120 Homes
Okatoma Water Assn, - 2350 Homes
Old River Water Assn, - 905 Homes
Old Union Water Assn, - 1033 Homes
Orange Grove Utility, - 3400 Homes
Palmetto Water Assn, - 500 Homes
Panhandle Water Assn, - 430 Homes
Panola Union Water Assn, - 270 Homes
Pattison Community Water Assn, - 915 Homes
Paulding Water Assn, - 370 Homes
Paynes Water Assn/ice Storm, - 180 Homes
Pearl River Central , - 2170 Homes
Philadelphia Utilities, - 3182 Homes
Philip Water Association, - 200 Homes
Piney Flats Community, - 15 Homes
Pisgah Water Assn, - 320 Homes
Pleasant Grove Water Assn, - 234 Homes
Pleasant Hill Water Assn, - 1086 Homes
Pleasant Ridge Water Assn, - 1400 Homes
Pochantos Water Assn, - 50 Homes
Polkville Water Assn, - 380 Homes
Pope Courtland, - 740 Homes
Mississippi, - Poplar Springs Water Assn, - 165 Homes
Porterville Water Assn, - 880 Homes
Posseumneck Carmack Water Assn, - 354 Homes
Powers Water Assn, - 775 Homes
Primrose Water Assn, - 265 Homes
Punkin Water Assn, - 300 Homes
Randolph Water Assn, - 361 Homes
Rawls Springs Utility, - 795 Homes
Raymond Water Dep tment, - 700 Homes
Red Banks Water Assn, - 50 Homes
Reedtown Water Assn, - 825 Homes
Rock Hill Water Assn, - 200 Homes
Rocky Creek Utility, - 485 Homes
Rose Hill Water Assn, - 470 Homes
Rosedale Water Assn, - 350 Homes

Runnelstown Utility, - 590 Homes
S W Covington Water Assn, - 890 Homes
S.E. Greene Co. Water Assn., - 490 Homes
S.W. Covington Water Assn, - 940 Homes
S.W. Jones Water Assn, - 1235 Homes
S.W. Lauderdale Water Assn, - 430 Homes
S.W. Leake Water Assn, - 695 Homes
Saltillo Water Assocation, - 1135 Homes
Sanford Water Assn, - 100 Homes
Saucier Utility, - 410 Homes
Shady Grove Water, - 120 Homes
Shangalo Water Assn., - 460 Homes
Sharon Water Association, - 900 Homes
Shivers Water Assn, - 730 Homes
Shongalo Rural Water Assn, - 450 Homes
Short Coleman/piney Flats W.a, - 13 Homes
Shuqualak Buter Water Assn, - 200 Homes
Siloam Water Assn, - 1400 Homes
Simpson Water Assn, - 415 Homes
Sixtown Water Assn, - 265 Homes
Smith Crossing Water Assn, - 1450 Homes
Snow Lake Shores Water Assn, - 25 Homes
Sontag Wanilla Water Assn, - 425 Homes
Soso Water Association, - 490 Homes
South Central Water Assn, - 2700 Homes
South Lake Water Assn, - 260 Homes
South Newton Water Assn, - 910 Homes
South Quitman Water Assn, - 343 Homes
South Terry Water Assn., - 153 Homes
South Winona Water Assn, - 26 Homes
Southern Rankin Water Assn, - 1200 Homes
Mississippi, - Southside Water Assn, - 35 Homes
Southwest Covington Water Assn, - 900 Homes
Southwest Jones Water Assn, - 1235 Homes
Springdale Water Assn, - 175 Homes
St Thomas Water Assn, - 150 Homes
Stewart Water Assn, - 325 Homes
Strayhorn Water Assn, - 751 Homes
Stringer Water Assn, - 1040 Homes
Strong Hill Water Assn, - 498 Homes
Sun Creek Water Assn, - 470 Homes
Sunflower Water Association, - 34 Homes
Sunny Oaks Water Assn, - 200 Homes
Sunrise Utility, - 900 Homes
SW Covington Water Assn, - 937 Homes
SW Wayne Water Assn, - 330 Homes
Sweet Home Water & Sewer, - 530 Homes
Sylvarena Water Assn, - 220 Homes
Symond Water Assn, - 75 Homes
Tallahala Water Assn, - 1720 Homes
Thomastown Water Assn, - 265 Homes
Three Forks Water Assn, - 397 Homes
Tipplersville Water Assn., - 306 Homes
Toomsuba Water System, - 1020 Homes
Topisaw Creek Water Assn, - 560 Homes
Town of Aberdeen, - 3200 Homes
Town of Ackerman, - 795 Homes
Town of Alligator, - 95 Homes
Town of Anguilla, - 325 Homes
Town of Arcola, - 280 Homes
Town of Baldwyn, - 1200 Homes
Town of Basafield, - 390 Homes
Town of Batesville, - 2800 Homes
Town of Beaumont, - 490 Homes
Town of Belmont, - 1500 Homes
Town of Benoit, - 200 Homes
Town of Bentonia, - 180 Homes
Town of Beulah , - 200 Homes
Town of Blue Mountain, - 505 Homes
Town of Bolton, - 280 Homes
Town of Braxton, - 254 Homes
Town of Bruce, - 1100 Homes
Town of Bude, - 495 Homes
Town of Burnsville, - 400 Homes
Town of Cary, - 235 Homes
Town of Centreville, - 815 Homes
Town of Chunky, - 130 Homes
Mississippi, - Town of Coldwater, - 721 Homes
Town of Como, - 485 Homes
Town of Corinth, - 5500 Homes
Town of Crenshaw, - 340 Homes
Town of Crosby, - 200 Homes
Town of Crowder, - 322 Homes
Town of D'iberville Water & Sewer, - 2200 Homes
Town of D'lo, - 200 Homes
Town of Derma, - 457 Homes
Town of Doddsville, - 80 Homes
Town of Drew , - 1000 Homes
Town of Duck Hil, - 250 Homes
Town of Duncan, - 180 Homes
Town of Ecru, - 495 Homes
Town of Edwards, - 630 Homes
Town of Enterprise, - 260 Homes
Town of Ethel /Water Assn, - 300 Homes
Town of Eupora, - 1586 Homes
Town of Falkner, - 780 Homes

Town of Fayette, - 800 Homes
Town of Flora, - 550 Homes
Town of Florence, - 487 Homes
Town of Friars Poin, - 435 Homes
Town of Georgetown, - 200 Homes
Town of Gloster, - 750 Homes
Town of Gunnison, - 300 Homes
Town of Hatley, - 525 Homes
Town of Hazelhurst, - 2150 Homes
Town of Heidelberg, - 460 Homes
Town of Hickory, - 720 Homes
Town of Invernese, - 430 Homes
Town of Jonestown, - 350 Homes
Town of Jumpertown, - 450 Homes
Town of Kilmichae, - 535 Homes
Town of Koecuisko, - 2800 Homes
Town of Lake, - 210 Homes
Town of Leland, - 2600 Homes
Town of Liberty, - 330 Homes
Town of Maben, - 450 Homes
Town of Mathiston, - 336 Homes
Town of Mccoo, - 230 Homes
Town of Meadville, - 300 Homes
Town of Merigold, - 260 Homes
Town of Meritta Water, - 200 Homes
Town of Metcalfe, - 400 Homes
Town of Monticello, - 760 Homes
Mississippi, - Town of Mt Olive, - 400 Homes
Town of Nettleton, - 914 Homes
Town of New Augusta, - 315 Homes
Town of New Hebron, - 235 Homes
Town of Olive Branch, - 2855 Homes
Town of Osyka, - 225 Homes
Town of Pace, - 200 Homes
Town of Pachuta, - 125 Homes
Town of Pelahatchie, - 600 Homes
Town of Pickens, - 530 Homes
Town of Pittsboro, - 260 Homes
Town of Plantersville, - 565 Homes
Town of Poplarville, - 865 Homes
Town of Raleigh, - 550 Homes
Town of Richton, - 575 Homes
Town of Rienzi, - 300 Homes
Town of Roxie, - 255 Homes
Town of Ruleville, - 1100 Homes
Town of Saltillo, - 1100 Homes
Town of Sandersville, - 365 Homes
Town of Scooba, - 220 Homes
Town of Seminary, - 150 Homes
Town of Senatobia, - 2036 Homes
Town of Shannon, - 587 Homes
Town of Shaw, - 830 Homes
Town of Sherman, - 267 Homes
Town of Shubuta, - 310 Homes
Town of Silver Creek, - 160 Homes
Town of Smithville, - 810 Homes
Town of State Line, - 220 Homes
Town of Stonewal, - 615 Homes
Town of Sturgis, - 130 Homes
Town of Summit, - 655 Homes
Town of Sumner, - 200 Homes
Town of Sumral, - 500 Homes
Town of Sunflower, - 320 Homes
Town of Taylorsville, - 730 Homes
Town of Tchula, - 742 Homes
Town of Terry, - 240 Homes
Town of Tishomingo, - 300 Homes
Town of Tunica, - 1237 Homes
Town of Tutwiler, - 425 Homes
Town of Union, - 830 Homes
Town of Utica, - 525 Homes
Town of Vaiden, - 368 Homes
Town of Vardaman, - 435 Homes
Mississippi, - Town of Walnut, - 430 Homes
Town of Webb, - 287 Homes
Town of Weir, - 220 Homes
Town of Wesson, - 420 Homes
Town of Winterville, - 60 Homes
Traxler Water Assn, - 285 Homes
Tremont Water Assn, - 272 Homes
Tri County Water Assn, - 1100 Homes
Tri Lake Rural Water Assn, - 498 Homes
Turner Springs Water Assn, - 110 Homes
Union Church Water Assn, - 340 Homes
Walker Switch Water Assn, - 310 Homes
Walls Water Assn, - 1000 Homes
Wautubee Water Assn, - 150 Homes
Webb Utility, - 93 Homes
West Holmes Water Assn, - 275 Homes
West Lamar Water Assn, - 2200 Homes
West Madison Utility, - 315 Homes
West Marion Water Assn, - 420 Homes
West Tallahatchie Utility, - 190 Homes
Westwick Utilities, - 80 Homes
Wheeler Frankstown Water Assn, - 1070 Homes
Whistler Water Assn, - 900 Homes

White Station Water Assn, - 140 Homes
Wilk Amite Water Assn, - 645 Homes
Willow Grove Water Assn, - 570 Homes
Winterville Water Assn, - 60 Homes
Wren Water Assn, - 694 Homes
Zama Water Assn, - 160 Homes
Homes
Homes
Montana, - Absarokee, - 320 Homes
Alberton, - 140 Homes
Anaconda, - 2991 Homes
Angel Island, - 60 Homes
Ayres Colony, - 15 Homes
Bainville, - 106 Homes
Baker, - 800 Homes
Bear Creek, - 24 Homes
Bear Trap Hot Springs, - 10 Homes
Belfrey Carbon County, - 95 Homes
Belgrade, - 250 Homes
Belt, - 269 Homes
Big Fork, - 170 Homes
Big Sandy, - 370 Homes
Big Sky, - 100 Homes
Montana, - Big Timber, - 800 Homes
Billings Heights, - 3000 Homes
Bitterroot Meadows, - 45 Homes
Blue Sky Heights, - 130 Homes
Boulder, - 500 Homes
Brady, - 121 Homes
Bridger, - 267 Homes
Broadus, - 287 Homes
Brockton, - 135 Homes
Browning, - 2150 Homes
C & D HOA, - 28 Homes
C S & K Water, - 600 Homes
Carter, - 220 Homes
Cascade, - 198 Homes
Coffee Cree, - 30 Homes
Centerville, - 40 Homes
Charlo, - 145 Homes
Chester, - 500 Homes
Chinook, - 514 Homes
Choteau, - 750 Homes
Circle, - 300 Homes
Clear View Heights, - 28 Homes
Clyde Park, - 85 Homes
Columbia Falls, - 1000 Homes
Columbia Heights, - 50 Homes
Columbus, - 725 Homes
Conrad, - 930 Homes
Coram, - 90 Homes
Corbin Wua, - 15 Homes
CS & K Water, - 600 Homes
Culbertson, - 330 Homes
Cut Bank, - 1514 Homes
Darby, - 270 Homes
Deer Lodge, - 1390 Homes
Deerborn Water System, - 10 Homes
Deerfield, - 15 Homes
Del Bonita, - 3 Homes
Denton, - 100 Homes
Dillon, - 1500 Homes
Dixon, - 60 Homes
Dodson, - 64 Homes
Drummond, - 24 Homes
Duncan Ranch, - 15 Homes
Dutton, - 190 Homes
Eagle Bend, - 150 Homes
East Gate, - 410 Homes
Montana, - East Glacier, - 200 Homes
East Helena, - 350 Homes
East Malta Colony, - 10 Homes
El Mar Estates WUA, - 450 Homes
Elm Estates, - 450 Homes
Elston Loken, - 300 Homes
Emkayen, - 60 Homes
Ennis, - 390 Homes
Essex, - 28 Homes
Eureka, - 450 Homes
Evergreen, - 1640 Homes
Fairfield, - 400 Homes
Fairhaven, - 30 Homes
Fairield, - 365 Homes
Flaxville, - 65 Homes
Forest Park, - 123 Homes
Forsyth, - 1000 Homes
Fort Benton, - 750 Homes
Fort Kipp, - 36 Homes
Fort Peck, - 166 Homes
Froid, - 200 Homes
Fromberg, - 177 Homes
Furtura, - 48 Homes
Gardner, - 307 Homes
Geraldine, - 67 Homes
Geyser, - 50 Homes
Glasgow, - 1800 Homes

Golden Valley, - 25 Homes
Gore Hil, - 280 Homes
Grant Creek, - 144 Homes
Grass Range, - 84 Homes
Greenwood Water, - 28 Homes
Hamilton, - 1443 Homes
Happy Valley, - 70 Homes
Happy's Water, - 24 Homes
Hardin, - 1033 Homes
Harlem, - 450 Homes
Harlowton, - 750 Homes
Havre, - 3500 Homes
Hidden Heights , - 28 Homes
Highwood, - 27 Homes
Hill County Water District, - 747 Homes
Hillside Colony, - 15 Homes
Hilltop Terrace, - 50 Homes
Hingham, - 747 Homes
Hinsdale, - 150 Homes
Montana, - Hobson, - 65 Homes
Hot Springs, - 140 Homes
Hungry Horse, - 230 Homes
Hysham, - 300 Homes
Ingom , - 20 Homes
Issac Walten Lodge, - 15 Homes
Jackson, - 25 Homes
Jette Lake, - 145 Homes
Joliet, - 220 Homes
Jordan, - 230 Homes
Judith Gap, - 85 Homes
Kevin, - 100 Homes
Kicking Horse , - 28 Homes
KS & C Water, - 640 Homes
Lake Side, - 148 Homes
Lambert, - 80 Homes
Lame Deer, - 840 Homes
Laure, - 4000 Homes
Lewistown, - 2700 Homes
Libby, - 1800 Homes
Livingston, - 3400 Homes
Lockwood, - 1600 Homes
Lolo Water District, - 660 Homes
Malta, - 800 Homes
Manhattan, - 451 Homes
Marco, - 24 Homes
Martinsdale, - 80 Homes
Meadow Village, - 70 Homes
Medicine Lake, - 230 Homes
Melstone, - 90 Homes
Miles City, - 3496 Homes
Mission Mountain Water District, - 28 Homes
Missoula Water, - 205 Homes
Moore, - 100 Homes
Mountain Water, - 6000 Homes
Nashua, - 150 Homes
North Havre Water District, - 56 Homes
North Valley Water District, - 200 Homes
Noxon, - 80 Homes
Opheim, - 110 Homes
Outlook, - 50 Homes
Overlook , - 12 Homes
Pablo, - 168 Homes
Paradise, - 98 Homes
Phillipsberg, - 322 Homes
Pinewood, - 81 Homes
Montana, - Plains, - 444 Homes
Plentywood, - 978 Homes
Plevna, - 45 Homes
Polson, - 1350 Homes
Ponderella Hills, - 24 Homes
Ponderosa WUA, - 24 Homes
Poplar , - 110 Homes
Pt Armigan Village, - 50 Homes
Rae Subdivision , - 250 Homes
Ramer , - 30 Homes
Rau School District, - 10 Homes
Red Lodge, - 1200 Homes
Rexford, - 69 Homes
Richy, - 140 Homes
Ron Thomas, - 800 Homes
Ronan, - 800 Homes
Round Butte, - 110 Homes
Roundup, - 900 Homes
Roy, - 25 Homes
Rygate, - 105 Homes
Saco, - 80 Homes
Salish Kootenie Water, - 600 Homes
Salish Shares, - 28 Homes
Sanders County WD, - 60 Homes
Scobey, - 800 Homes
Seeley Lake, - 380 Homes
Shelby, - 1500 Homes
Sheridan, - 365 Homes
Shilo Shores, - 24 Homes
Sidney, - 1200 Homes
Sleeping Buffalo, - 15 Homes

Somers, - 146 Homes
Sorrell Sprisngs, - 60 Homes
South Chouteau WUA, - 27 Homes
South Hills , - 28 Homes
Spring Water, - 15 Homes
Springdale, - 25 Homes
St Ignatius, - 280 Homes
Stanford, - 180 Homes
Stevensville, - 800 Homes
Strobel MHP, - 21 Homes
Sun Praire, - 278 Homes
Sun River, - 100 Homes
Sun Set West , - 32 Homes
Sunburst, - 200 Homes
Sunny Brook , - 28 Homes
Montana, - Sunny Meadows, - 60 Homes
Superior, - 300 Homes
Sweetgrass, - 65 Homes
Tamarack , - 60 Homes
Target Range, - 100 Homes
Three Forks, - 616 Homes
Tiber WD, - 250 Homes
Townsend, - 650 Homes
Tracey, - 82 Homes
Tri County Water District, - 170 Homes
Trout Beck, - 60 Homes
Trout Creek, - 113 Homes
Troy, - 542 Homes
Twin Bridges, - 240 Homes
Two Dot, - 30 Homes
Valier, - 255 Homes
Valley Gardens HOA, - 18 Homes
Valley View, - 40 Homes
Vaughn, - 180 Homes
Virginia City, - 60 Homes
West Glacier, - 40 Homes
West Valley Pines, - 44 Homes
West Yellowstone, - 500 Homes
Westby, - 71 Homes
White Sulpher Springs, - 500 Homes
Whitehal, - 400 Homes
Wilderness Plateau, - 24 Homes
Wilsal, - 100 Homes
Winnett, - 108 Homes
Wolf Point, - 1200 Homes
Woodside, - 24 Homes
Worden Ballintine, - 300 Homes
Yellow Bay, - 24 Homes
Youth Mission Water Association, - 50 Homes
Zortman, - 87 Homes
Homes
Homes
North Carolina, - Aberdeen, - 1700 Homes
Alexander County Water, - 2100 Homes
Andrews, - 600 Homes
Apex, - 2200 Homes
Archdale, - 3000 Homes
Arlington, - 270 Homes
Atlantic Beach, - 3200 Homes
Aurora, - 350 Homes
Autryville, - 65 Homes
North Carolina, - Bailey, - 250 Homes
Bear Grass, - 30 Homes
Beaufort, - 1300 Homes
Beaulaville, - 300 Homes
Bell Arthur, - 2600 Homes
Belmont, - 5000 Homes
Bessemer City, - 2200 Homes
Black Creek, - 170 Homes
Black Mountain, - 2400 Homes
Bladen County Water, - 1600 Homes
Bladenboro, - 700 Homes
Bolivia, - 100 Homes
Bolton, - 170 Homes
Boone, - 2800 Homes
Brentwood Water, - 2400 Homes
Broadway, - 300 Homes
Brunswick, - 200 Homes
Bryson City, - 1200 Homes
Burgaw, - 700 Homes
Burke - Caldwel, - 700 Homes
Burnsville, - 900 Homes
Cabarrus County Water, - 3500 Homes
Calabash, - 400 Homes
Cameron, - 80 Homes
Canton, - 1400 Homes
Cape Hatteras Water, - 2900 Homes
Carolina Beach, - 2000 Homes
Carthage, - 300 Homes
Caswell Beach, - 160 Homes
Catawba, - 350 Homes
Chadbourn, - 790 Homes
Chatham County Utilities, - 2574 Homes
Cherokee, - 1100 Homes
China Grove, - 1800 Homes
Chinquapin, - 1000 Homes

Chocowinity, - 450 Homes
Chowan County, - 3400 Homes
City of Graham, - 4000 Homes
Claremont, - 550 Homes
Clarkton, - 300 Homes
Cleveland, - 280 Homes
Clyde, - 550 Homes
Conover, - 1600 Homes
Conway, - 425 Homes
Cornelius, - 900 Homes
Cramerton, - 1100 Homes
North Carolina, - Currituck County Water, - 2800 Homes
Dallas, - 1800 Homes
Davidson, - 1400 Homes
Davie County, - 3300 Homes
Denton, - 900 Homes
Dillsboro, - 50 Homes
Dublin, - 230 Homes
Duplin County Water, - 1200 Homes
East Spencer, - 850 Homes
Edenton, - 1700 Homes
Elizabethtown, - 1200 Homes
Elkin, - 1300 Homes
Erwin, - 1200 Homes
Faison, - 425 Homes
Faith, - 315 Homes
Figure Eight Island, - 315 Homes
Fishermans Cove, - 130 Homes
Fountain, - 150 Homes
Four Oaks, - 850 Homes
Foxfire Village, - 300 Homes
Franklin, - 1900 Homes
Fremont, - 500 Homes
Fuquay-Varina, - 1600 Homes
Garland, - 350 Homes
Goldston-Gulf S.D., - 500 Homes
Graham, - 3300 Homes
Granite Quarry, - 550 Homes
Greenleve, - 450 Homes
Halifax, - 150 Homes
Handy Sanitary District, - 2300 Homes
Harnett County, - 4400 Homes
Haw River, - 750 Homes
Hayesville, - 450 Homes
Hazel Wood, - 850 Homes
Holden Beach, - 200 Homes
Holly Ridge, - 400 Homes
Holly Springs, - 1000 Homes
Huntersville, - 1300 Homes
Icard Township Water Corp., - 1600 Homes
Inter-County Water, - 450 Homes
Iredell Water Corporation, - 4400 Homes
Jackson, - 350 Homes
Jamestown, - 800 Homes
Jefferson, - 500 Homes
Jonesville, - 750 Homes
Kannapolis, - 4200 Homes
North Carolina, - Kenansville, - 360 Homes
Kill Devil Hills, - 1500 Homes
Kitty Hawk, - 400 Homes
Kure Beach, - 400 Homes
Lake Waccamaw, - 630 Homes
Laurel Park, - 450 Homes
Lea Acres, - 45 Homes
Leland Sanitary Dist., - 1325 Homes
Liberty, - 700 Homes
Lilesville, - 245 Homes
Lillington, - 970 Homes
Lincoln County Water, - 2700 Homes
Linconton, - 1200 Homes
Linville Ridge Water, - 250 Homes
Littleton, - 500 Homes
Long Beach, - 1300 Homes
Lowel, - 900 Homes
Maggie Valley Sanitary Dist., - 1100 Homes
Magnolia, - 275 Homes
Maple Hill Water, - 300 Homes
Marble Community Water System, - 430 Homes
Marion, - 3400 Homes
Mars Hil, - 600 Homes
Marshal, - 400 Homes
Marshville, - 1000 Homes
Maxton, - 1200 Homes
Maysville, - 300 Homes
Mebane, - 2100 Homes
Middlesex, - 400 Homes
Mocksville, - 1100 Homes
Montreat, - 300 Homes
Moore Water & Sewer Authority, - 5000 Homes
Morehead City, - 2000 Homes
Mount Olive, - 2400 Homes
Mt. Gilead, - 650 Homes
Mt. Holly, - 3300 Homes
Mt. Olive, - 1300 Homes
Mulberry/Fairplains Water Asso., - 2200 Homes

Murphy, - 1166 Homes
Nags Head, - 600 Homes
New Hanover County, - 250 Homes
Newport, - 950 Homes
Newton Grove, - 750 Homes
Norlina, - 600 Homes
North Wilkesboro, - 1200 Homes
Northwest Water Supply, - 600 Homes
North Carolina, - Ocean Isle Beach, - 1440 Homes
Old Fort, - 850 Homes
Onslow County Utilities, - 16000 Homes
Orange/Alamance Water, - 2800 Homes
Parkton, - 223 Homes
Pasquotank County Water, - 5000 Homes
Peachland, - 150 Homes
Pender County Water, - 700 Homes
Perquimans County Water, - 2800 Homes
Pikeville, - 460 Homes
Pineville, - 1000 Homes
Pittsboro, - 500 Homes
Polkton, - 300 Homes
Ranlo, - 1100 Homes
Red Springs, - 1600 Homes
Robbins, - 600 Homes
Rockfish, - 225 Homes
Rockwel, - 550 Homes
Rose Hil, - 700 Homes
Roseboro, - 650 Homes
Sandy Mush Water Corp., - 1200 Homes
Saratoga, - 120 Homes
Scotland Neck, - 850 Homes
Shallotte, - 330 Homes
Sharpesburg, - 500 Homes
Siler City, - 1400 Homes
South Mills Water Assoc., - 900 Homes
Southport, - 800 Homes
Spencer, - 1100 Homes
Spring Lake, - 2700 Homes
Spruce Pine, - 1050 Homes
Stedman, - 250 Homes
Stokesdale, - 0 Homes
Stoneville, - 625 Homes
Stuckaseigee Water, - 1100 Homes
Sunset Beach, - 230 Homes
Surf City, - 1000 Homes
Swansboro, - 800 Homes
Tabor City, - 1200 Homes
Tarheel Water Corp., - 105 Homes
Taylorsville, - 850 Homes
Teachey, - 80 Homes
Topsail Beach, - 700 Homes
Town of Autryville, - 150 Homes
Town of Benson, - 1800 Homes
Town of Bethe, - 1000 Homes
North Carolina, - Town of Elm City, - 600 Homes
Town of Four Oaks, - 1000 Homes
Town of Lincolnton, - 1200 Homes
Town of Maxton, - 500 Homes
Town of Oak City , - 325 Homes
Town of Old Fort, - 600 Homes
Town of Princeville, - 700 Homes
Town of Topsail Beach, - 1200 Homes
Town of Yaupon Beach, - 600 Homes
Triple Community Water, - 1700 Homes
Troy, - 1500 Homes
Tryon, - 1100 Homes
Tuckaseigee Water, - 1100 Homes
Vass, - 230 Homes
W. Yanceyville, - 65 Homes
W. Iredel, - 400 Homes
Wagram, - 350 Homes
Walkertown, - 500 Homes
Wallace, - 1300 Homes
Walnut Cove, - 300 Homes
Walstonburg, - 125 Homes
Warrenton, - 1000 Homes
Warsaw, - 1000 Homes
Waynesville, - 1100 Homes
Weaverville, - 900 Homes
West Carteret, - 350 Homes
West Iredell Water Corporation, - 1100 Homes
West Jefferson, - 500 Homes
West Yanceyville, - 65 Homes
White Lake, - 900 Homes
Whiteville, - 2700 Homes
Whittier Sanitary Dist., - 125 Homes
Wilkesboro, - 1000 Homes
Windsor, - 2270 Homes
Wingate, - 1000 Homes
Woodfin Sanitary Dist., - 2200 Homes
Wrightsville Beach, - 1000 Homes
Yanceyville, - 700 Homes
Yaupon Beach, - 250 Homes
Zebulon, - 1000 Homes
Homes
Homes

North Dakota, - Abercrombie, - 100 Homes
Adams, - 130 Homes
Agassiz Rural Water, - 1100 Homes
Alexander, - 80 Homes
North Dakota, - All Seasons Rural Water, - 840 Homes
Almont, - 40 Homes
Ambrose Pumping Station, - 1 Homes
Amenia, - 36 Homes
Amoco Cafe, - 1 Homes
Anamoose, - 136 Homes
Argusville, - 54 Homes
Arthur, - 100 Homes
Ashley, - 397 Homes
Barnes Rural Water, - 1050 Homes
Battleground Addition, - 45 Homes
Beach, - 538 Homes
Behm's Truck Stop Cafe, - 1 Homes
Belfield, - 410 Homes
Benedict, - 35 Homes
Benson , - 0 Homes
Berthold, - 138 Homes
Beulah, - 1200 Homes
Binford, - 130 Homes
Bisbee, - 121 Homes
Bottineau, - 1000 Homes
Bowbells, - 236 Homes
Bowdon, - 120 Homes
Bowman, - 852 Homes
Buffalo, - 125 Homes
Burleigh County Rural Water, - 865 Homes
Burlington, - 394 Homes
Cando, - 428 Homes
Carrington, - 886 Homes
Carson, - 230 Homes
Cass Rural Water, - 2222 Homes
Casselton, - 580 Homes
Cathay, - 34 Homes
Cavalier, - 700 Homes
Center, - 350 Homes
Christine Water Association, - 100 Homes
Cogswel, - 75 Homes
Coleharbor, - 49 Homes
Colfax, - 44 Homes
Colony Trailer Park Minot, - 30 Homes
Columbus, - 121 Homes
Cooperstown, - 550 Homes
Crary, - 45 Homes
Crosby, - 636 Homes
Crown Butte Coop, - 80 Homes
Crystal Springs Water Co, - 1 Homes
North Dakota, - Dakota Prairie Cafe, - 1 Homes
Dakota Rural Water, - 657 Homes
Dazey, - 58 Homes
Deering, - 50 Homes
Devils Lake, - 2480 Homes
Dickey Rural Water, - 560 Homes
Dodge, - 67 Homes
Drake, - 135 Homes
Drayton, - 340 Homes
Dunn Center, - 63 Homes
Dunseith, - 300 Homes
Edgeley, - 320 Homes
Edmore, - 153 Homes
Elgin, - 382 Homes
Ellendale, - 700 Homes
Emerado, - 283 Homes
Enderlin, - 470 Homes
Fairmont, - 190 Homes
Farmers Elevator - Grace City, - 1 Homes
Federal Beef Processors, - 2 Homes
Fessenden, - 365 Homes
Finley, - 221 Homes
Fireside Lounge, - 1 Homes
Flasher, - 186 Homes
Forbes, - 37 Homes
Forman, - 270 Homes
Fort Totten, - 800 Homes
Fort Yates, - 800 Homes
Fortuna, - 40 Homes
Friendly Bar , - 1 Homes
Ft. Berthold Indian Reservation, - 600 Homes
Gackle, - 230 Homes
Galesburg, - 75 Homes
Garden Bar , - 1 Homes
Garden Gate Golf Club, - 2 Homes
Garrison, - 700 Homes
Gladstone, - 79 Homes
Glen Ullin, - 440 Homes
Glenburn, - 150 Homes
Glenfield, - 70 Homes
Golden Valley, - 120 Homes
Golva, - 59 Homes
Goodrich, - 90 Homes
Grafton, - 1860 Homes
Grand Forks Traill Water Users, - 2300 Homes

Grandin, - 95 Homes
North Dakota, - Grandma's Kitchen, - 1 Homes
Granville, - 125 Homes
Grenora, - 98 Homes
Gwinner, - 224 Homes
Halliday, - 155 Homes
Hankinson, - 358 Homes
Harvey, - 876 Homes
Harwood, - 174 Homes
Harwood Development, - 174 Homes
Hatton, - 290 Homes
Hauge, - 35 Homes
Hazelton, - 118 Homes
Hazen, - 1000 Homes
Hebron, - 415 Homes
Hettinger, - 609 Homes
Hillsboro, - 850 Homes
Hope, - 110 Homes
Horace, - 250 Homes
Hunter, - 184 Homes
Jud, - 39 Homes
Karlsruhe, - 58 Homes
Kenmare, - 510 Homes
Kensa, - 94 Homes
Killdeer, - 350 Homes
Kindred, - 230 Homes
KPA Campground - Minot, - 1 Homes
Kulm, - 283 Homes
Lake Front Enterprise, - 3 Homes
Lakeshore Enterprises, - 1 Homes
Lakota, - 383 Homes
Lamoure, - 310 Homes
Langdon, - 980 Homes
Lansford, - 92 Homes
Larimore, - 532 Homes
Leeds, - 300 Homes
Lehr, - 108 Homes
Lidgerwood, - 212 Homes
Lignite, - 121 Homes
Lincoln, - 430 Homes
Linton, - 888 Homes
Lisbon, - 846 Homes
Litchville, - 81 Homes
Ludden, - 21 Homes
Maddock, - 250 Homes
Makoti, - 92 Homes
Mandaree, - 250 Homes
North Dakota, - Mantador, - 51 Homes
Mapleton, - 205 Homes
Marion, - 90 Homes
Marmarth, - 74 Homes
Max, - 150 Homes
Mayville, - 700 Homes
Mcclusky, - 210 Homes
Mclean-Sheridan Rural Water, - 300 Homes
Mcville, - 225 Homes
Medina, - 200 Homes
Medora, - 40 Homes
Mercer, - 45 Homes
Metigoshe Ministries, - 3 Homes
Michigan, - 184 Homes
Milnor, - 305 Homes
Milton, - 68 Homes
Minnewaukan, - 172 Homes
Minto, - 255 Homes
Missouri West Water System, - 400 Homes
Mohal, - 400 Homes
Mott, - 450 Homes
Mountain, - 56 Homes
Mt Carmel Homes
Napoleon, - 400 Homes
Nawa, - 0 Homes
Neche, - 200 Homes
New England, - 301 Homes
New Leipzig, - 165 Homes
New Rockford, - 760 Homes
New Salem, - 425 Homes
New Town, - 550 Homes
Nick & Helen's Bar , - 1 Homes
Nome, - 44 Homes
North Prairie Rural Water, - 1222 Homes
North Valley Water, - 1133 Homes
Northwood, - 536 Homes
Oakes, - 800 Homes
Oberon, - 42 Homes
Oriska, - 49 Homes
Osnabrock, - 56 Homes
Page, - 185 Homes
Park River, - 780 Homes
Parshal, - 391 Homes
Pembina, - 257 Homes
Pick City, - 93 Homes
Pierce County Rural Water, - 0 Homes
North Dakota, - Plaza, - 112 Homes
Porta, - 84 Homes
R & T Water Supply, - 20 Homes

Ramsey County Rural Utilities, - 444 Homes
Ray, - 270 Homes
Reeder, - 130 Homes
Regent, - 260 Homes
Rhame, - 90 Homes
Richardton, - 265 Homes
Richland Rural Water, - 921 Homes
Riverdale, - 120 Homes
Rock Lake, - 70 Homes
Rolette, - 243 Homes
Rolla, - 594 Homes
Roosters, - 1 Homes
Ross, - 32 Homes
Rugby, - 1000 Homes
Rutland, - 95 Homes
Scranton, - 110 Homes
Senior Citizen Building, - 1 Homes
Sentinel Butte, - 41 Homes
Sheldon, - 85 Homes
Sherwood, - 137 Homes
Sheyenne, - 140 Homes
Simon's Bar & Cafe, - 2 Homes
Solen, - 40 Homes
Southwest Water Authority, - 0 Homes
Sportsmans Bar , - 1 Homes
St. John, - 131 Homes
St. Thomas, - 220 Homes
Stanley, - 600 Homes
Stanton, - 220 Homes
Steele, - 340 Homes
Stickleback Bar , - 1 Homes
Streeter, - 108 Homes
Stutsman County Rural Water, - 840 Homes
Surrey, - 341 Homes
Sykeston, - 90 Homes
The Bar , - 1 Homes
Tioga, - 530 Homes
Tolna, - 88 Homes
Totten Trai, - 1 Homes
Tower City, - 86 Homes
Town & Country Gril, - 2 Homes
Towner, - 325 Homes
Traill County Rural Water, - 752 Homes
North Dakota, - Traynor Park, - 20 Homes
Tri County Water Users, - 770 Homes
Triangle Y Camp, - 25 Homes
Turtle Lake, - 360 Homes
Tuttle, - 76 Homes
Two Way Inn, - 2 Homes
Underwood, - 390 Homes
Upham, - 81 Homes
Upper Souris Rural Water, - 525 Homes
Valley City, - 2864 Homes
Velva, - 400 Homes
VFW Club, - 1 Homes
Wahpeton, - 1800 Homes
Walcott, - 80 Homes
Walhalla, - 476 Homes
Walsh Rural Water, - 1260 Homes
Warwick, - 25 Homes
Washburn, - 572 Homes
Watford City, - 816 Homes
Wells County Rural Water, - 724 Homes
Westhope, - 250 Homes
Wheel Inn Lounge, - 1 Homes
Williams Rural Water, - 524 Homes
Wilton, - 300 Homes
Wimbledon, - 128 Homes
Wing, - 100 Homes
Wishek, - 700 Homes
Woodworth, - 60 Homes
Writing Rock Rural Water, - 0 Homes
Wyndmere, - 254 Homes
York Cafe, - 2 Homes
Zap, - 110 Homes
Zeeland, - 125 Homes
Homes
Homes
Nebraska, - Alliance, - 3255 Homes
Arlington, - 393 Homes
Atkinson, - 394 Homes
Aurora, - 1089 Homes
Bancroft, - Homes
Bayard, - 399 Homes
Beemer, - 224 Homes
Bertrand, - 236 Homes
Bloomfield, - 393 Homes
Brady, - 95 Homes
Cass Co Rwd #1, - 861 Homes
Nebraska, - Cedar Bluffs, - 197 Homes
Cedar Knox RWD, - 500 Homes
City of Alliance, - 2790 Homes
City of Alma, - 350 Homes
City of Arapahoe, - 286 Homes
City of Ashland, - 610 Homes
City of Auburn, - 984 Homes

City of Battlecreek, - 285 Homes
City of Beaver City, - 202 Homes
City of Benkelman, - 341 Homes
City of Bennington, - 247 Homes
City of Broken Bow, - 1079 Homes
City of Cambridge, - 316 Homes
City of Central City, - 819 Homes
City of Chappel, - 280 Homes
City of Clarkson, - 200 Homes
City of Clay Center, - 236 Homes
City of Cozad, - 1092 Homes
City of Crete, - 1383 Homes
City of Crofton, - 234 Homes
City of Curtis, - 227 Homes
City of David City, - 721 Homes
City of Edgar , - 171 Homes
City of Franklin, - 318 Homes
City of Friend, - 317 Homes
City of Fullerton, - 415 Homes
City of Geneva, - 689 Homes
City of Genoa, - 309 Homes
City of Gering, - 2770 Homes
City of Gothenburg, - 923 Homes
City of Grant, - 354 Homes
City of Hartington, - 469 Homes
City of Harvard, - 279 Homes
City of Henderson, - 285 Homes
City of Holdrege, - 1620 Homes
City of Hooper, - 243 Homes
City of Humphrey, - 212 Homes
City of Indianola, - 192 Homes
City of Kimbal, - 838 Homes
City of Lexington, - 1886 Homes
City of Loup City, - 318 Homes
City of Madison, - 510 Homes
City of Mccook, - 2318 Homes
City of Milford, - 539 Homes
City of Minden, - 786 Homes
City of Minitare, - 281 Homes
Nebraska,- City of Mitchel, - 495 Homes
City of Nebraska City, - 1870 Homes
City of Neligh, - 498 Homes
City of Nelson, - 179 Homes
City of Newman Grove, - 225 Homes
City of North Bend, - 357 Homes
City of O'Neil, - 1101 Homes
City of Ord, - 709 Homes
City of Osceola, - 251 Homes
City of Oshkosh, - 282 Homes
City of Oxford, - 271 Homes
City of Peru, - 317 Homes
City of Ponca, - 265 Homes
City of Ravenna, - 376 Homes
City of Scribner, - 271 Homes
City of Snyder, - 80 Homes
City of Springfield, - 407 Homes
City of St. Edward, - 235 Homes
City of St. Pau, - 524 Homes
City of Stanton, - 443 Homes
City of Stromsburg, - 355 Homes
City of Superior, - 685 Homes
City of Sutherland, - 295 Homes
City of Sutton, - 387 Homes
City of Syracuse, - 470 Homes
City of Tekamah, - 529 Homes
City of Tilden, - 256 Homes
City of Valentine, - 807 Homes
City of Wahoo, - 1051 Homes
City of Wakefield, - 328 Homes
City of Waverly, - 534 Homes
City of Wayne, - 1714 Homes
City of Wilber, - 437 Homes
City of Wood River, - 330 Homes
City of Wymore, - 460 Homes
City of Yutan, - 179 Homes
City of Geneva, - 689 Homes
Clarkson, - 200 Homes
Community Services, - 324 Homes
Craig, - 66 Homes
Creighton, - 349 Homes
Cuming Co Rwd, - 625 Homes
Cumming Cty. Rwd #1, - 422 Homes
Dakota City, - 420 Homes
David City, - 721 Homes
Decatur, - 213 Homes
Nebraska,- Elm Creek, - 243 Homes
Emerson, - 226 Homes
Fairmont, - 236 Homes
Gering, - 2649 Homes
Gibbon, - 436 Homes
Hay Springs, - 231 Homes
Hemingford, - 318 Homes
Herman, - 62 Homes
Homer, - 158 Homes
Hooper, - 283 Homes
Howells, - 178 Homes

Johnson Co Rwd #1, - 365 Homes
Lancaster Rwd #1, - 670 Homes
Leigh, - 128 Homes
Lewis & Clark Rwd, - 345 Homes
Logan East Rwd, - 500 Homes
Lyons, - 327 Homes
Macy-Omaha Tribe, - 180 Homes
Maxwel, - 81 Homes
Mccook, - 2318 Homes
Mead, - 171 Homes
Memphis, - 39 Homes
Merriman, - Homes
Oakland, - 500 Homes
Omaha Tribe, - 514 Homes
Omaha-Papio , - 300 Homes
Orleans, - 163 Homes
Otoe Rwd #1, - 972 Homes
Oxford, - 316 Homes
Pawnee City, - 288 Homes
Pawnee Meadows, - 48 Homes
Pleasanton, - 106 Homes
Rising City, - 123 Homes
Riverside Lakes SID #177, - 0 Homes
Rushville, - 322 Homes
Sands Trailer Park-la Platt, - 49 Homes
Sarpy Cty SID #24, - 26 Homes
Scribner, - 317 Homes
Shelby, - 230 Homes
SID 7 - Valla Heights, - 14 Homes
Snyder, - 93 Homes
Stanton, - 472 Homes
Stromsburg, - 414 Homes
Superior, - 799 Homes
Sutherland, - 254 Homes
T. Oaks Sid, - 42 Homes
Nebraska, - Tekameh, - 617 Homes
Thurton Co. Rwd, - 120 Homes
Uehling, - 91 Homes
Valentine, - 807 Homes
Valla Heights, - 14 Homes
Valley, - 592 Homes
Valparaiso, - 137 Homes
Village of Sumner, - 60 Homes
Villa Heights, - 14 Homes
Village Memphis, - 33 Homes
Village of Adams, - 135 Homes
Village of Alda, - 154 Homes
Village of Alexandria, - 64 Homes
Village of Alvo, - 48 Homes
Village of Amherst, - 66 Homes
Village of Ansley, - 159 Homes
Village of Arcadia, - 110 Homes
Village of Arlington, - 337 Homes
Village of Ashton, - 72 Homes
Village of Avoca, - 73 Homes
Village of Axtel, - 202 Homes
Village of Bancroft, - 250 Homes
Village of Bartlett, - 37 Homes
Village of Bayard, - 342 Homes
Village of Beaver Crossing, - 125 Homes
Village of Beemer, - 224 Homes
Village of Belden, - 46 Homes
Village of Bellwood, - 113 Homes
Village of Belvedere, - 38 Homes
Village of Benedict, - 66 Homes
Village of Bennett, - 155 Homes
Village of Bertrand, - 202 Homes
Village of Big Springs, - 141 Homes
Village of Bloomfield, - 337 Homes
Village of Bradshaw, - 94 Homes
Village of Brady, - 96 Homes
Village of Brownville, - 82 Homes
Village of Bruning, - 96 Homes
Village of Bruno, - 40 Homes
Village of Brunswick, - 52 Homes
Village of Bryon, - 40 Homes
Village of Burr, - 27 Homes
Village of Bushnel, - 53 Homes
Village of Cairo, - 210 Homes
Village of Callaway, - 154 Homes
Village of Campbel, - 123 Homes
Nebraska, - Village of Carleton, - 42 Homes
Village of Cedar Bluffs, - 169 Homes
Village of Cedar Rapids, - 125 Homes
Village of Center, - 44 Homes
Village of Ceresco, - 239 Homes
Village of Chambers, - 97 Homes
Village of Chappel, - 326 Homes
Village of Clarks, - 108 Homes
Village of Clarkson, - 233 Homes
Village of Clatonia, - 85 Homes
Village of Clearwater, - 115 Homes
Village of Coleridge, - 170 Homes
Village of Cook, - 95 Homes
Village of Corchester, - 175 Homes
Village of Cordova, - 42 Homes

Village of Creston, - 63 Homes
Village of Culbertson, - 227 Homes
Village of Dalton, - 81 Homes
Village of Dannebrog, - 93 Homes
Village of Davenport, - 109 Homes
Village of Davey, - 46 Homes
Village of Dawson, - 62 Homes
Village of Daykin, - 54 Homes
Village of Decatur, - 181 Homes
Village of Deweese, - 28 Homes
Village of Dewitt, - 171 Homes
Village of Diller, - 89 Homes
Village of Dix, - 65 Homes
Village of Doniphan, - 210 Homes
Village of Dorchester, - 175 Homes
Village of Dunb , - 49 Homes
Village of Edison, - 42 Homes
Village of Elba, - 63 Homes
Village of Elkcreek, - 33 Homes
Village of Elm Creek, - 243 Homes
Village of Elmwood, - 167 Homes
Village of Elsie, - 44 Homes
Village of Elwood, - 167 Homes
Village of Emerald, - 27 Homes
Village of Endicott, - 54 Homes
Village of Ericson, - 42 Homes
Village of Exeter, - 189 Homes
Village of Fairfield, - 131 Homes
Village of Fairmont, - 202 Homes
Village of Farnam, - 57 Homes
Village of Firth, - 136 Homes
Nebraska,- Village of Garland, - 71 Homes
Village of Giltner, - 105 Homes
Village of Glenvi, - 87 Homes
Village of Grafton, - 48 Homes
Village of Greenwood, - 152 Homes
Village of Gresham, - 72 Homes
Village of Guide Rock, - 83 Homes
Village of Haigler, - 64 Homes
Village of Hampton, - 123 Homes
Village of Hardy, - 59 Homes
Village of Hayes Center, - 74 Homes
Village of Henry, - 91 Homes
Village of Herman, - 53 Homes
Village of Hershey, - 165 Homes
Village of Hildreth, - 104 Homes
Village of Hooper, - 283 Homes
Village of Hordville, - 47 Homes
Village of Hoskins, - 88 Homes
Village of Hubbard, - 57 Homes
Village of Jansen, - 40 Homes
Village of Johnson, - 92 Homes
Village of Juniata, - 232 Homes
Village of Kenesaw, - 234 Homes
Village of Lawrence, - 92 Homes
Village of Leigh, - 128 Homes
Village of Lindsay, - 96 Homes
Village of Lodgepole, - 105 Homes
Village of Long Pine, - 113 Homes
Village of Louisville, - 288 Homes
Village of Lyman, - 129 Homes
Village of Madrid, - 80 Homes
Village of Maskel, - 32 Homes
Village of Maxwel, - 81 Homes
Village of Mccoo, - 106 Homes
Village of Mead, - 147 Homes
Village of Meadow Grove, - 102 Homes
Village of Memphis, - 34 Homes
Village of Miller, - 49 Homes
Village of Milligan, - 94 Homes
Village of Minatare, - 231 Homes
Village of Mitchel, - 581 Homes
Village of Monroe, - 88 Homes
Village of Moorefield, - 52 Homes
Village of Morril, - 275 Homes
Village of Morse Bluff, - 37 Homes
Village of Murdock, - 76 Homes
Nebraska,- Village of Nemaha, - 54 Homes
Village of Newcastle, - 77 Homes
Village of Newman Grove, - 225 Homes
Village of Niobrara, - 107 Homes
Village of North Loup, - 103 Homes
Village of Oakdale, - 103 Homes
Village of Oakland, - 365 Homes
Village of Odel, - 83 Homes
Village of Ohiowa, - 42 Homes
Village of Ong, - 36 Homes
Village of Orleans, - 140 Homes
Village of Overton, - 156 Homes
Village of Oxford, - 271 Homes
Village of Palmer, - 124 Homes
Village of Palmyra, - 165 Homes
Village of Panama, - 59 Homes
Village of Paxton, - 153 Homes
Village of Petersburg, - 111 Homes
Village of Pilger, - 103 Homes

Village of Platte Center, - 111 Homes
Village of Pleasanton, - 106 Homes
Village of Potter, - 111 Homes
Village of Ragan, - 27 Homes
Village of Republican City, - 57 Homes
Village of Rising City, - 97 Homes
Village of Riverton, - 46 Homes
Village of Rockville, - 42 Homes
Village of Roya, - 30 Homes
Village of Scotia, - 91 Homes
Village of Shelby, - 197 Homes
Village of Shelton, - 270 Homes
Village of Shickley, - 103 Homes
Village of Shubert, - 68 Homes
Village of Silver Creek, - 125 Homes
Village of Snyder, - 80 Homes
Village of Stamford, - 54 Homes
Village of Sterling, - 129 Homes
Village of Stratton, - 122 Homes
Village of Stuart, - 186 Homes
Village of Sumner, - 60 Homes
Village of Sutherland, - 295 Homes
Village of Swanton, - 42 Homes
Village of Table Rock, - 88 Homes
Village of Terrytown, - 218 Homes
Village of Tobias, - 36 Homes
Village of Uehling, - 78 Homes
Nebraska, - Village of Unadilla, - 84 Homes
Village of Upland, - 98 Homes
Village of Utica, - 205 Homes
Village of Valparaiso, - 137 Homes
Village of Verdigre, - 173 Homes
Village of Verdon, - 69 Homes
Village of Virginia, - 27 Homes
Village of Waco, - 60 Homes
Village of Wallace, - 88 Homes
Village of Western, - 75 Homes
Village of Winnetoon, - 40 Homes
Village of Winside, - 124 Homes
Village of Wood Lake, - 27 Homes
Village of Yutan, - 179 Homes
Wahoo, - 1052 Homes
Wallace, - 102 Homes
Walthil, - 213 Homes
Washington Co. RWD, - 180 Homes
Waterloo, - 137 Homes
Wausa, - 199 Homes
West Point, - 1083 Homes
Woodlake, - 17 Homes
York, - 2647 Homes
Homes
Homes
New Jersey, - Aberdeen, - 2727 Homes
Allendale Water Dept, - 2025 Homes
Allentown, - 2000 Homes
Alpha, - 1000 Homes
Altantic Highlands Water Dept, - 1506 Homes
Andover Boro Water Dept, - 298 Homes
Atlantic Highlands, - 1506 Homes
Avalon, - 4500 Homes
Avon by the Sea, - 1000 Homes
Barnegat, - 3000 Homes
Beach Haven, - 2037 Homes
Beachwood Water Dept, - 2900 Homes
Bellmar , - 2885 Homes
Berkley Twp, - 651 Homes
Berlin, - 2000 Homes
Blairstown Water Dept, - 208 Homes
Bloomingdale Water Dept, - 1995 Homes
Bloomsburg Water Dept, - 350 Homes
Boonton, - 2727 Homes
Bordentown City, - 2800 Homes
Boro of Spring Lake, - 1800 Homes
New Jersey, - Brainards Mutual Assoc., - 52 Homes
Branchville Water Dept, - 364 Homes
Brielle, - 1454 Homes
Brooklawn Water Dept, - 764 Homes
Buena, - 1100 Homes
Burlington City Water Dept, - 2810 Homes
Butler Water Dept, - 2450 Homes
Caldwell Water Dept, - 2298 Homes
Cape May Point, - 538 Homes
Chatham Water Dept, - 2600 Homes
Chester, - 130 Homes
Clayton, - 1967 Homes
Clementon, - 1667 Homes
Clinton, - 2900 Homes
Delaware Twp, - 95 Homes
Deptford, - 2700 Homes
East Greenwich Twp Water Dept, - 1300 Homes
East Hanover Water Dept, - 3000 Homes
East Newark Water Dept, - 848 Homes
Egg Harbor, - 286 Homes
Elmer, - 473 Homes
Englishtown, - 318 Homes
Essex Falls Water Dept, - 758 Homes

Fairfield Water Dept, - 2800 Homes
Farmindale Water Dept, - 424 Homes
Fieldsboro Water Dept, - 182 Homes
Fkirebce Twp Water Dept, - 2788 Homes
Flemington, - 1265 Homes
Florence Water Dept, - 2788 Homes
Florham Park Water Dept, - 2434 Homes
Franklin, - 1212 Homes
Glen Gardner, - 563 Homes
Glenridge Water Dept, - 2303 Homes
Greenwich Twp Water Dept, - 1929 Homes
Hackettstown Water Dept, - 2300 Homes
Haledon Water Dept, - 2800 Homes
Hamburg, - 1147 Homes
Hamilton Twp , - 2424 Homes
Hammonton, - 2500 Homes
Hampton Boro Water Dept, - 435 Homes
Harvey Cedars Water Dept, - 1020 Homes
Helmetta Water Dept, - 660 Homes
High Bridge Water Dept, - 1387 Homes
Highlands Water Dept, - 1686 Homes
Hightstown, - 1384 Homes
Hilmetta, - 660 Homes
New Jersey,- Hohokus Water Dept, - 1420 Homes
Hopatcong, - 1587 Homes
Hopewel, - 808 Homes
Hoptcong Water Dept, - 1587 Homes
Howell Twp, - 91 Homes
Independence, - 30 Homes
Island Heights Water Dept, - 834 Homes
Jefferson Water Dept, - 2700 Homes
Keansberg, - 2865 Homes
Keyport, - 2273 Homes
Kinnelon, - 200 Homes
Lakehurst, - 909 Homes
Lavalette, - 3000 Homes
Long Beach Twp, - 8000 Homes
Longport, - 1300 Homes
Lower Alloway, - 29 Homes
Manalapan, - 196 Homes
Manasquan, - 1576 Homes
Mansfield Water Dept, - 30 Homes
Mantua, - 2500 Homes
Margate Water Dept, - 5500 Homes
Matawan, - 2879 Homes
Mays Landing, - 2424 Homes
Middle Twp Dist #1, - 135 Homes
Middle Twp Water Dist #2, - 175 Homes
Milford, - 606 Homes
Milltown, - 2162 Homes
Mine Hil, - 1100 Homes
Mountain Lakes Water Dept, - 1300 Homes
Mt Ephraim Water Dept, - 1450 Homes
Mt Olive, - 1679 Homes
Mt. Ephraim, - 1450 Homes
National Park, - 1086 Homes
Netcong, - 1600 Homes
Newfield Water Dept, - 560 Homes
Newton, - 2424 Homes
North Caldwell Water Dept, - 1879 Homes
Ocean Gate, - 455 Homes
Ogdenberg, - 879 Homes
Park Ridge Water Dept, - 2500 Homes
Paulsboro, - 2300 Homes
Pemberton Boro, - 484 Homes
Pennington, - 926 Homes
Pine Beach Water Dept, - 830 Homes
Pine Hil, - 2576 Homes
Pitman, - 2700 Homes
New Jersey,- Point Pleasant Beach, - 5000 Homes
Ringwood Water Dept, - 2792 Homes
Riverdale Water Dept, - 909 Homes
Rockaway Boro Water Dept, - 2879 Homes
Rocky Hil, - 288 Homes
Roosevelt, - 310 Homes
Roseland Water Dept, - 1582 Homes
Roxbury Twp Water Dept, - 1931 Homes
Roybunty Twp Water Dept, - 1931 Homes
S. Amboy, - 2727 Homes
Salem, - 2237 Homes
Sea Girt, - 803 Homes
Sea Heights, - 2900 Homes
Sea Isle City, - 6500 Homes
Seaside Heights Water Dept, - 2900 Homes
Ship Bottom, - 1800 Homes
South Amboy Water Dept, - 2727 Homes
South Belm , - 1800 Homes
Sparta, - 2424 Homes
Spotswood, - 2550 Homes
Spring Lake, - 1800 Homes
Stafford Cedar Bonnett, - 80 Homes
Stafford MUA, - 256 Homes
Stafford MUA Fawn Leakes, - 136 Homes
Stanhope, - 1600 Homes
Stockton Water Dept, - 203 Homes
Stone Harbor, - 2700 Homes

Surf City, - 1200 Homes
Sussex, - 80 Homes
Swedesboro Water Dept, - 1200 Homes
Tuckerton, - 1365 Homes
Upper Deerfield, - 91 Homes
Waldwick Water Dept, - 2787 Homes
Wanaque Water Dept, - 3184 Homes
Washington Twp Mua, - 1800 Homes
Waterford, - 250 Homes
Wehonah Water Dept, - 698 Homes
West Cape May, - 3025 Homes
West Milford Mua, - 1486 Homes
West Wildwood, - 600 Homes
Westville, - 1875 Homes
Wharton Water Dept, - 2182 Homes
Woobdine Water Dept, - 848 Homes
Woodbury Heights, - 1061 Homes
Woodstown, - 1600 Homes
Wrightstown, - 288 Homes
Homes
New Mexico, - Abiquivar, - 130 Homes
Agua Fria, - 250 Homes
Alamo, - 250 Homes
Algodones, - 150 Homes
Alto, - 1200 Homes
Angel Fire, - 670 Homes
Anthony, - 2500 Homes
Anton Chico, - 150 Homes
Arenas Valley, - 275 Homes
B & B Water System, - 15 Homes
Bayard, - 600 Homes
Berino, - 160 Homes
Bernalillo, - 3000 Homes
Berrendo Water Association, - 1200 Homes
Bibo, - 150 Homes
Big Mesa, - 320 Homes
Blanco, - 200 Homes
Bloomfield, - 3000 Homes
Boles Aceres, - 250 Homes
Bosque Del Apache, - 18 Homes
Caballo, - 100 Homes
Canjilon, - 32 Homes
Cannon, - 85 Homes
Canones, - 45 Homes
Canyon Del Rito, - 30 Homes
Capitan, - 600 Homes
Capulin, - 62 Homes
Carrizozo, - 600 Homes
Casa Adobes, - 45 Homes
Casa De Gavilon, - 15 Homes
Cebolla, - 25 Homes
Cedarvale, - 6 Homes
Centra, - 550 Homes
Chama, - 600 Homes
Chamisa, - 86 Homes
Chamita, - 250 Homes
Chapara, - 400 Homes
Chilili, - 30 Homes
Cimarron, - 250 Homes
City of Santa Rosa, - 800 Homes
City of Socorro, - 7000 Homes
Cloud County West, - 75 Homes
Cloudcroft, - 1200 Homes
Columbus, - 400 Homes
Conchas Lake, - 335 Homes
Conjilon, - 85 Homes
New Mexico, - Corona, - 250 Homes
Coyote, - 32 Homes
Cuba, - 520 Homes
Cumberland, - 155 Homes
Des Moines, - 65 Homes
Dexler, - 360 Homes
Dexter, - 300 Homes
Dila, - 20 Homes
Dixon, - 186 Homes
Dona Ana, - 2000 Homes
Dora, - 72 Homes
Eagle Nest, - 150 Homes
East Glorieta, - 60 Homes
East Pecos, - 150 Homes
Edgewood Water Utility, - 1200 Homes
El Llano, - 175 Homes
El Rito, - 300 Homes
Encino, - 32 Homes
Entranosa, - 1200 Homes
Estancia, - 600 Homes
Farley, - 7 Homes
Flora Vista, - 600 Homes
Floyd, - 52 Homes
Fort Stanton, - 1500 Homes
Fort Summer, - 761 Homes
Gadaden, - 200 Homes
Gallina, - 30 Homes
Garfield, - 600 Homes
Ghost Ranch, - 100 Homes
Glorieta East, - 70 Homes

Grady, - 62 Homes
Guadalupita, - 90 Homes
Hagerman, - 250 Homes
Hanover, - 150 Homes
Harding County Commission, - 25 Homes
Hatch, - 600 Homes
Hernandez, - 2000 Homes
High Valley, - 12 Homes
Hillsboro, - 160 Homes
House, - 39 Homes
Hurly, - 650 Homes
Ilfield, - 185 Homes
Jemez Pueblo, - 2000 Homes
Jemez Springs, - 150 Homes
La, - 600 Homes
La Jala, - 100 Homes
New Mexico, - La Luz, - 500 Homes
La Mesa, - 250 Homes
La Mesilla, - 500 Homes
La Plata, - 500 Homes
Lake Shore, - 400 Homes
Lake Side, - 40 Homes
Lake Site, - 16 Homes
Lamy, - 60 Homes
Las Uvas, - 30 Homes
Leasburg, - 200 Homes
Lee Acres, - 1200 Homes
Lincoln, - 60 Homes
Lindrith, - 26 Homes
Logan, - 250 Homes
Lone St , - 37 Homes
Los Brazos, - 28 Homes
Los Ojos, - 70 Homes
Lower Valley Water Users Association, - 1600 Homes
Magdalena, - 400 Homes
Manzano, - 18 Homes
Melrose, - 200 Homes
Mendanles, - 1 Homes
Mesilla, - 500 Homes
Mesquite, - 613 Homes
Miami, - 50 Homes
Milagro, - 40 Homes
Mora, - 250 Homes
Moriarty, - 800 Homes
Morningstar, - 600 Homes
Mountain Park, - 150 Homes
Mountain View, - 240 Homes
Mountainair, - 600 Homes
Navajo Dam , - 110 Homes
Noga, - 31 Homes
Nora Vista, - 32 Homes
North San Ysidro, - 38 Homes
North Star Water Users Association, - 310 Homes
Ojo Caliente, - 150 Homes
Organ, - 138 Homes
Pena Blanca, - 150 Homes
Penasco, - 250 Homes
Pendaries, - 135 Homes
Picacho, - 170 Homes
Pine Hil, - 250 Homes
Pinos Altos, - 94 Homes
Placitas, - 250 Homes
New Mexico, - Pojaque, - 2000 Homes
Polvadera, - 150 Homes
Ponderosa, - 150 Homes
Portales, - 1100 Homes
Puerto De Luna, - 60 Homes
Punta De Agua, - 15 Homes
Questa, - 548 Homes
Rancho Grande, - 80 Homes
Rancho Ruidoso, - 27 Homes
Regina, - 185 Homes
Reserve, - 200 Homes
Rincon, - 100 Homes
Rio Chichto, - 45 Homes
Rio Grande Health Center, - 15 Homes
Roosevelt County Coop, - 834 Homes
Rosedale, - 75 Homes
Ruidoso Downs, - 700 Homes
Rutheron, - 150 Homes
Salem, - 130 Homes
San Acacia, - 150 Homes
San Antonio, - 185 Homes
San Jon, - 125 Homes
San Migue, - 18 Homes
San Ysidro, - 98 Homes
Sandia Pueblo, - 700 Homes
Sandoval County, - 180 Homes
Sangre De Cristo, - 36 Homes
Santa Ana Pueblo, - 200 Homes
Santa Rita, - 100 Homes
Santa Rosa, - 800 Homes
Shiprock, - 2300 Homes
Sierra Vista South, - 42 Homes
Siete Del Norte, - 13 Homes
Silver Cloud WUA, - Homes

Socorro, - 2000 Homes
South Santa Fe, - 5 Homes
Southside Water Users Association, - 286 Homes
Springer, - 700 Homes
Sunland, - 1500 Homes
Tajique, - 60 Homes
Talarosa, - 1800 Homes
Taos, - 2300 Homes
Tecalote, - 49 Homes
Tecolotito, - 85 Homes
Teirra Amarilla, - 80 Homes
Tesuque, - 250 Homes
New Mexico, - Texico, - 300 Homes
Thoreau, - 250 Homes
Tijeras, - 300 Homes
Torreon, - 30 Homes
Town of Dexter, - 500 Homes
Town of Hagerman, - 470 Homes
Trailier Ranch, - 25 Homes
Tres Peidras, - 60 Homes
Truth or Consequences, - 2000 Homes
Tucumcari, - 3000 Homes
Tularosa, - 1200 Homes
Twin Forks, - 400 Homes
Upper Anton Chico, - 60 Homes
Upper Canoncito, - 26 Homes
Upper La Plata Water Users Association, - 400 Homes
Vado, - 100 Homes
Valle Rea, - 60 Homes
Vallecitos, - 32 Homes
Vaughn, - 600 Homes
Velarde, - 120 Homes
Village of Hatch, - 640 Homes
Village of Magdalena, - 346 Homes
Village of Reserve, - 220 Homes
Village of Roy, - 197 Homes
Village of Ruidoso Downs, - 600 Homes
Vista Rea, - 60 Homes
Wagon Mound, - 125 Homes
Watrous, - 47 Homes
West Hammond, - 550 Homes
Willard, - 85 Homes
Youngsville, - 40 Homes
Zia Pueblo, - 2000 Homes
Homes
Homes
Nevada, - Alamo Farmstead, - 600 Homes
Alamo Water, - 217 Homes
Amargosa Water, - 20 Homes
Austin Water, - 200 Homes
Baker GID, - 0 Homes
Battle Mountain Sewer & Water, - 780 Homes
Beatty Water, - 536 Homes
Big Bend Water, - 1300 Homes
Blue Diamond, - 110 Homes
Boulder Beach, - 80 Homes
Boulder City Water, - 2500 Homes
Bunkerville, - 150 Homes
Nevada, - Caliente Public Utility, - 511 Homes
Callville Bay, - 90 Homes
Carlin Water, - 600 Homes
Caselton Water, - 30 Homes
Central Nevada Utilities, - 1000 Homes
Central Valley Utilities, - 800 Homes
City of Boulder City, - 3500 Homes
City of Elko Water, - 5000 Homes
City of Ely, - 1500 Homes
City of Fallon, - 2000 Homes
City of Gabbs, - 253 Homes
City of Henderson, - 20000 Homes
City of Wells, - 450 Homes
City of West Wendover, - 340 Homes
City of Winnemucca, - 2000 Homes
City of Yerington, - 1000 Homes
City Vu Mobile Park, - 30 Homes
Coeur-rochester Water, - 10 Homes
Cold Creek Water, - 36 Homes
Cottonwood Cove, - 70 Homes
Crescent Valley, - 100 Homes
Crystal Bay Water, - 107 Homes
Dayton Public Utilities, - 1300 Homes
Echo Bay, - 84 Homes
Edgewood Water Co., - 50 Homes
Elk Point Water, - 93 Homes
Ely City Water, - 2000 Homes
Eureka Town Water, - 385 Homes
Fallon City Water, - 2000 Homes
Fernely Utilities, - 1800 Homes
Frontier Village Mobile P k, - 32 Homes
Gabbs Water, - 238 Homes
Gardnervill GID, - 2800 Homes
Glenbrook Water, - 250 Homes
Golconda Town Water, - 45 Homes
Gold Country Water Co., - 95 Homes
Goldfield Public Utility, - 260 Homes
Good Springs Water, - 5 Homes

Hadley Water, - 281 Homes
Hawthorne Utilities, - 1355 Homes
Holbrook Water, - 39 Homes
Hoover Dam Water, - 22 Homes
Imlay Water, - 65 Homes
Incline Village , - 2840 Homes
Indian Hill , - 400 Homes
Indian Springs Water, - 374 Homes
Nevada, - Jackpot Water, - 237 Homes
Jean Water, - 59 Homes
Kings Row Mobil Park, - 360 Homes
Kingsbury , - 2500 Homes
Kingston Water, - 66 Homes
Kyle Canyon Water, - 420 Homes
Lamoile Water, - 47 Homes
Las Vegas Mobil Park, - 187 Homes
Lehman Caves, - 25 Homes
Lovelock Meadows, - 1002 Homes
Lovelock Water, - 1205 Homes
Low Chapparral Water, - 2 Homes
Manhattan Association, - 55 Homes
Mason Water, - 390 Homes
Mcdermitt Water, - 85 Homes
Mcgill Water, - 575 Homes
Mesquite Farmstead Water, - 650 Homes
Midas Water, - 0 Homes
Mina Water, - 152 Homes
Minden Town Water, - 1250 Homes
Minden-Gardnerville Water, - 1500 Homes
Moapa Valley Water, - 1523 Homes
Montello Water, - 52 Homes
Mountain City Water, - 56 Homes
Oasis Water, - 25 Homes
Orovada Water, - 43 Homes
Overton Beach, - 20 Homes
Owyhee Water, - 250 Homes
Painted Desert Water, - 15 Homes
Palm Gardens, - 28 Homes
Panaca Farmstead , - 260 Homes
Pioche, - 311 Homes
Pioneer Saloon Water, - 2 Homes
Pleasent Valley Water, - 200 Homes
Rainbow Bend Water, - 212 Homes
Ridgeview Estates Water, - 140 Homes
Roake Mobil Home Water, - 28 Homes
Round Hill GID, - 430 Homes
Round Mountain Assoc., - 28 Homes
Roundhill Gid, - 1000 Homes
Ruth Water, - 160 Homes
Schurz Water, - 275 Homes
Searchlight, - 309 Homes
Shadow Mountain Water, - 115 Homes
Sierra Estates Gid, - 64 Homes
Silver Peak Water, - 77 Homes
Nevada, - Silver Springs, - 780 Homes
Skyline Water Water, - 250 Homes
Spirit Mountain Water, - 117 Homes
Spring Creek, - 2280 Homes
Spring Mountain Water, - 20 Homes
Stagecoach GID, - 300 Homes
Stateline Water, - 128 Homes
Steamboat Springs Water, - 290 Homes
Storey County Water, - 500 Homes
Strong Cafe and Hotel Water, - 10 Homes
Tonopah Water, - 1500 Homes
Topaz Mutual Water, - 430 Homes
Town of Beatty Water, - 510 Homes
Town of Minden, - 980 Homes
Tumbleweed Inn Water, - 2 Homes
Tuscara Water, - 24 Homes
Twin Gables Water, - 21 Homes
Valmy Water, - 120 Homes
Virgin River Water, - 800 Homes
Virginia City Water, - 519 Homes
Walker Lake Water, - 20 Homes
Weed Heights Water, - 90 Homes
Wells Water, - 425 Homes
Wendover Water, - 400 Homes
Whiskey Petes Casino, - 128 Homes
Winnemucca City Water, - 1658 Homes
Yerington Water, - 1000 Homes
Zepher Cove Water, - 338 Homes
Homes
Homes
New York, - Afton, - 428 Homes
Akron, - 1100 Homes
Alexandria Bay, - 600 Homes
Alleghany, - 730 Homes
Andover, - 225 Homes
Antwerp, - 250 Homes
Arkport, - 330 Homes
Arkville, - 125 Homes
Athens, - 600 Homes
Aurora, - 350 Homes
Bainbridge, - 600 Homes
Baldwinsville, - 3000 Homes

Ballston , - 1750 Homes
Barneveld, - 154 Homes
Barrytown, - 68 Homes
Belmont, - 500 Homes
New York, - Berkshire Farms, - 33 Homes
Big Indian, - 32 Homes
Blooming Grove, - 300 Homes
Bloomville, - 93 Homes
Boonville, - 825 Homes
Bridgewater, - 45 Homes
Brittany Estates, - 43 Homes
Brownsville, - 350 Homes
Callicoon Water Co., - 280 Homes
Cameron, - 56 Homes
Castile, - 655 Homes
Castle High Mobile Home Park, - 38 Homes
Cato, - 145 Homes
Catskil, - 2200 Homes
Cayuga, - 300 Homes
Cazenovia, - 800 Homes
Central Bridge, - 700 Homes
Central Square, - 700 Homes
Chaffee, - 100 Homes
Chaumont, - 350 Homes
Cherry Valley, - 250 Homes
Churchville, - 600 Homes
Cincinnatus, - 225 Homes
City of Hudson, - 2600 Homes
City of Sheril, - 1200 Homes
Clayville, - 136 Homes
Cleveland, - 350 Homes
Clinton, - 1000 Homes
Cold Springs, - 0 Homes
Constableville, - 128 Homes
Cooperstown, - 1042 Homes
Copenhagen, - 250 Homes
Corfu, Village of, - 275 Homes
Coxsackie, - 470 Homes
Crestwood Mobile Home Park - Erin, Ny, - 54 Homes
Croghan, - 350 Homes
Crown Point, - 300 Homes
Dairyland, - 15 Homes
Darien, - 250 Homes
Deansboro, - 127 Homes
Delavan, - 300 Homes
Delhi, - 600 Homes
Denver, - 100 Homes
Deposit, - 750 Homes
Deruyter, - 254 Homes
Dexter, - 420 Homes
New York, - Donnelly's Communities, - 64 Homes
Dryden Water Dist., - 490 Homes
Earlville, - 400 Homes
East Branch, - 53 Homes
East Randolph, - 276 Homes
Edmonston, - 200 Homes
Elka Park, - 45 Homes
Ellicottville, - 500 Homes
Emmons, - 32 Homes
Evans Mills, - 225 Homes
Flieschmanns, - 300 Homes
Floyd, - 220 Homes
Fonda, - 350 Homes
Forestport, - 180 Homes
Frankfort, - 900 Homes
Franklin, - 180 Homes
Friendship, - 600 Homes
Ft. Plain, - 1300 Homes
Fultonville, - 244 Homes
Genoa, - 270 Homes
Georgetown, - 80 Homes
Gilbertsville, - 187 Homes
Girffin , - 20 Homes
Gouverneur Village, - 1500 Homes
Grandview Estates, - 60 Homes
Grasslands , - 11 Homes
Green Meadows , - 28 Homes
Greene, - 600 Homes
Greenport, - 1160 Homes
Greenwich, - 800 Homes
Hamilton, - 825 Homes
Hamlet of Long Eddy, - 35 Homes
Hammondsport, - 500 Homes
Hancock, - 480 Homes
Harrisville, - 300 Homes
Hillside Plaza - Monroe, - 38 Homes
Hobart, - 200 Homes
Holland, - 250 Homes
Homer, - 1200 Homes
Hunter Creek, - 45 Homes
Interlaken, - 275 Homes
Irving, - 300 Homes
Ithaca, - 37 Homes
Jordan, - 510 Homes
Keene, - 334 Homes
Kinderhook, - 380 Homes

New York, - Kirkland, - 47 Homes
Lake Carme, - 630 Homes
Laurens, - 150 Homes
Limestone, - 150 Homes
Little Valley, - 530 Homes
Livingston Manor Leak Search, - 185 Homes
Locke, - 80 Homes
Lowville, - 1300 Homes
Lyons Falls, - 420 Homes
Maplehurst Mobile Home Park - Horseheads, - 40 Homes
Marathon, - 400 Homes
Margarettsville, - 300 Homes
Maybrook, - 1000 Homes
Mcconnellsville, - 90 Homes
Mcgraw, - 398 Homes
Mechanicville, - 725 Homes
Mexico, - 576 Homes
Middleburg, - 530 Homes
Middleville, - 265 Homes
Milford, - 150 Homes
Millport, - 109 Homes
Mohawk, - 1000 Homes
Montgomery, - 950 Homes
Montour Falls, - 845 Homes
Moravia, - 400 Homes
Morris, - 300 Homes
Morrisville, - 326 Homes
Mt. Upton, - 100 Homes
N. Hornel, - 225 Homes
N. Woodstock, - 44 Homes
Nassau, - 500 Homes
Nelliston, - 210 Homes
New Berlin, - 397 Homes
New Woodstock, - 44 Homes
North Hornel, - 225 Homes
North Java Water, - 110 Homes
Odessa, - 400 Homes
Old Forge, - 750 Homes
Orchard Park, - 60 Homes
Oriskany Falls, - 325 Homes
Oxford, - 570 Homes
Pavilion, - 225 Homes
Philadelphia, - 500 Homes
Pine Hil, - 96 Homes
Pine Plains, - 268 Homes
Pinewoods, - 42 Homes
New York, - Port Leyden, - 350 Homes
Prattsville, - 180 Homes
Randolph, - 430 Homes
Red Hook, - 27 Homes
Remsen, - 150 Homes
Richburg, - 225 Homes
Richfield Springs, - 650 Homes
Richmondville, - 242 Homes
Robin Meadows Water System, - 112 Homes
Roscoe/Livingston Manor, - 300 Homes
Roxbury, - 195 Homes
S. Otselic, - 80 Homes
Sacket Harbor, - 470 Homes
Salamanca, - 2700 Homes
Saranac Lake, - 680 Homes
Saratoga Water Co., - 1300 Homes
Saugerties, - 1100 Homes
Schenevus, - 210 Homes
Schoharie, - 430 Homes
Scot Run Development, - 40 Homes
Sennett, - 70 Homes
Sequoit, - 485 Homes
Sharon Springs, - 400 Homes
Shelter Valley Mobile Home Park, - 75 Homes
Sherburne, - 460 Homes
Sherril, - 1000 Homes
Sleepy Hollow, - 200 Homes
Speculator, - 357 Homes
Stamford, - 475 Homes
Stockbridge, - 310 Homes
Stokes, - 23 Homes
Stoney, - 1500 Homes
Stotz - Town of Wappingers Falls, - 50 Homes
Syrmna, - 88 Homes
Theresa, - 250 Homes
Throop, - 170 Homes
Town of Cold Springs, - 0 Homes
Town of Georgetown, - 120 Homes
Town of Keene, - 64 Homes
Town of Lewis, - 44 Homes
Town of Van Etten, - 145 Homes
Triangle , - 11 Homes
Trotter View Estates, - 32 Homes
Turin, - 136 Homes
Union Springs, - 250 Homes
Van Hornsville, - 50 Homes
New York, - Verona, - 500 Homes
Vill of Fort Ann, - 220 Homes
Vill of Gouverneur, - 750 Homes

Village of Akron, - 2630 Homes
Village of Allengay, - 480 Homes
Village of Austerlitz, - 210 Homes
Village of Catskil, - 2200 Homes
Village of Chatham, - 1100 Homes
Village of Cobleskil, - 1100 Homes
Village of Corfu, - 250 Homes
Village of Dryden, - 245 Homes
Village of E. Randolph, - 240 Homes
Village of Elizabethtown, - 185 Homes
Village of Fonda, - 382 Homes
Village of Ft. Ann, - 240 Homes
Village of Holland, - 300 Homes
Village of Hornel, - 1100 Homes
Village of Jefferson, - 240 Homes
Village of Maybrook, - 760 Homes
Village of Middleburgh, - 290 Homes
Village of Narrowsburgh, - 420 Homes
Village of Nunda, - 260 Homes
Village of Philmont, - 230 Homes
Village of Ravena, - 1800 Homes
Village of Richmondville, - 260 Homes
Village of Salamanca, - 980 Homes
Village of Schoharie, - 340 Homes
Village of Sharon Springs, - 250 Homes
Village of Speculator, - 380 Homes
Village of Stamford, - 430 Homes
Village of Ticonderoga, - 860 Homes
Village of Walden, - 840 Homes
Village of Worcester, - 260 Homes
Village of Youngsville, - 110 Homes
W. Conesville, - 30 Homes
W. Dryden, - 38 Homes
W. Oneonta, - 65 Homes
Walden, - 1600 Homes
Walton, - 1300 Homes
Warnerville , - 2 Homes
Washingtonville, - 1100 Homes
Watkins Glen, - 930 Homes
Weedsport, - 230 Homes
Wellsburg, - 230 Homes
West Wind, - 15 Homes
West Winfield, - 300 Homes
New York, - Westbrookville Water, - 84 Homes
Whitney Point, - 275 Homes
Willard, - 120 Homes
Windham, - 280 Homes
Woodridge, - 300 Homes
Youngsville, - 56 Homes
Homes
Homes
Northeast,- Allentown Pines Mhp, - 58 Homes
Allens Mhp, Nh Homes
Alpen Meadows Condos, - 26 Homes
Alton, Nh, - 350 Homes
Antrim, - 300 Homes
Apple Hill Ctr for Chamber Music, - 7 Homes
Ascutney, - 1 Homes
Ashburnham, Ma, - 900 Homes
Ashfield, Ma, - 140 Homes
Ashland, Nh, - 600 Homes
Atkinson, Nh, - 700 Homes
Ayer, Ma, - 1600 Homes
Bakersifeld, Vt, - 170 Homes
Balmoral Condos- Stratham, Nh, - 42 Homes
Barnard Central Schoo, - 1 Homes
Barre Town, Vt, - 35 Homes
Barre, Ma, - 860 Homes
Barstow Memorial School, Chittenden Vt, - 1 Homes
Barton, Vt, - 550 Homes
Bela Park- Bow, Nh, - 12 Homes
Belchertown, Ma, - 680 Homes
Bellows Falls, Vt, - 1100 Homes
Belmont, Nh, - 400 Homes
Bennington, Nh, - 220 Homes
Bensen Elem. School- Bensen, Vt, - 1 Homes
Bernardston, Ma, - 500 Homes
Berts Mhp- Milton, Vt, - 99 Homes
Bethel, Vt, - 330 Homes
Bethlehem, Nh, - 450 Homes
Birches of Bennington, Nh, - 18 Homes
Blakes Hill- Woodstock, Vt, - 26 Homes
Bradford, Vt, - 450 Homes
Brandon, Vt, - 1100 Homes
Brentwood, Nh, - 1 Homes
Brians Seafood- Kingston, Nh, - 1 Homes
Brighton, Vt, - 500 Homes
Calleye Currier-Bristol, Nh, - 1 Homes
Camp Blessing-Charleston, Nh, - 4 Homes
Northeast,- Camp Good News, Charlestown, Nh, - 29 Homes
Camp Hedding-Epping, Nh, - 121 Homes
Candia , - 28 Homes
Canaan Water Dept.,Vt, - 181 Homes
Cardigan Mtn Sch-Canaan, Nh, - 9 Homes
Cavendish, Vt, - 350 Homes

Cedar Creek Condos-Conway, Nh, - 18 Homes
Central School- New Ipswich, Nh, - 2 Homes
Charleston, Nh, - 800 Homes
Chelsea, Vt, - 160 Homes
Cheshire, Ma, - 500 Homes
Chesley's Mhp- Campton,Nh, - 29 Homes
Chester, Vt, - 500 Homes
Chichester Central School-Chichester, Nh, - 2 Homes
Childrens Workshop-Barrington, Nh, - 2 Homes
Coldsprings Mhp-Weare, Nh, - 34 Homes
Colebrook, Nh, - 500 Homes
Colrain, Ma, - 50 Homes
Columbia Mhp-Columbia, Nh, - 38 Homes
Conway, Nh, - 800 Homes
Cousins Pinza-Pelham, Nh, - 4 Homes
Country Kids Childcare-Weare, Nh, - 1 Homes
Country Mansion Condos-Amherst, Nh, - 30 Homes
Country Motel-Melvin Village, Nh, - 6 Homes
Crapo Elem Sch.-Sugar Hill, Nh, - 1 Homes
Crotched Mtn Maint.-Francistown, Nh, - 47 Homes
Cummington, Ma, - 100 Homes
Cuttingsville, Vt, - 27 Homes
Dalton, Ma, - 1600 Homes
Danbury Inn-Danbury, Nh, - 3 Homes
Danbury Sch.-Danbury, Nh, - 1 Homes
Deerfield, Ma, - 300 Homes
Deerwood Camp-Holderness, Nh, - 61 Homes
Derby Line, Vt, - 1000 Homes
Dighton, Ma, - 1100 Homes
Dorset, Vt, - 170 Homes
Dowd Inn-Lyme, Nh, - 10 Homes
Dublin School-Dublin, Nh, - 22 Homes
Dunstable, Ma, - 90 Homes
E Barre, Vt, - 210 Homes
E Burke Elem Sch-E Burke, Vt, - 2 Homes
E Dorset, Vt, - 80 Homes
East Burke, Vt, - 35 Homes
East Dorset, Vt, - 80 Homes
East Mountain Water Coop-Rutland, Vt, - 16 Homes
Eastman-Grantham, Nh, - 1000 Homes
Northeast,- Eaton Village Store-Eaton, Nh, - 3 Homes
Edgar Manor-Epsom, Nh, - 63 Homes
Enfield, Nh, - 500 Homes
Enosburg Falls, - 500 Homes
Epping, Nh, - 410 Homes
Epsom Manor Retirement-Epsom, Nh, - 64 Homes
Erving, Ma, - 200 Homes
Exeter Hampton Mhp-Exeter, Nh, - 52 Homes
Fair Haven, Vt, - 800 Homes
Fairfield Homeowners-Sandown, Nh, - 17 Homes
Farmington, Nh, - 900 Homes
Fitzwilliam, Nh, - 60 Homes
Forest Acres-Brandon, Vt, - 40 Homes
Francestown Water Co.-Francestown, Nh, - 82 Homes
Francestown, Nh, - 57 Homes
Freedom, Nh, - 80 Homes
Glen Abbey Mhp-Northwood, Nh, - 22 Homes
Gorham, Nh, - 1200 Homes
Grace Cottage Hospital Homes
Graniteville, Vt, - 230 Homes
Grantham, Nh (Eastmon), - 1000 Homes
Granville Elem. School-Granville,Vt, - 1 Homes
Great Barrington, Ma, - 1800 Homes
Great Meadows-Charlestown, Nh, - 10 Homes
Greenville, Nh, - 450 Homes
Griggs Mhp-Pittsfield, Nh, - 27 Homes
Groton, Ma, - 900 Homes
Groveton, Nh, - 1000 Homes
Guilford Ctry Estates-Guilford, Vt, - 23 Homes
Hadley, Ma, - 1800 Homes
Hardwick, Vt, - 850 Homes
Hartford, Vt, - 1700 Homes
Hatfield, Ma, - 1300 Homes
Havard, Ma, - 70 Homes
Haverhill Water Dist.-Haverhill, Nh, - 178 Homes
Henniker, Nh, - 950 Homes
Hillsboro, Nh, - 700 Homes
Hillside Manor Mhp-Starksboro, Vt, - 29 Homes
Hinsdale, Vt, - 1200 Homes
Hinsdale, Ma, - 300 Homes
Hinsdale, Nh, - 1000 Homes
Hiszerg Lane-Rutland, Vt, - 56 Homes
Hollow School-Stewartstown, Nh, - 1 Homes
Huntington, Ma, - 400 Homes
Hyde Park, Vt, - 200 Homes
Inn at Ascutney-Ascutney, Vt, - 170 Homes
Northeast,- Inn at Danbury-Danbury, Vt, - 3 Homes
Island Pond-Brighton, Vt, - 300 Homes
Isle La Motte Elem Sch-Isle La Motte, Vt, - 1 Homes
Jaffrey, Nh, - 1100 Homes
Jeffersonville, Vt, - 170 Homes
Johnson, Vt, - 300 Homes
Juniper Apt-Charleton, Ma, - 36 Homes
Karl Storz-Charlton, Ma, - 1 Homes

Kearsaarge Reg. Hs-Sutton, Nh, - 1 Homes
Killington, Vt, - 40 Homes
Kings Towne Mhp Epson, Nh, - 135 Homes
Kingswood-W. Dover, Vt, - 12 Homes
Lake Pleasant, Ma, - 75 Homes
Lakeshore Farm-Northwoodk, Nh, - 2 Homes
Lancaster, Nh, - 1000 Homes
Lanes End-Melvin Village, Nh, - 35 Homes
Lanesboro, Ma, - 900 Homes
Ledgeland-Sugar Hill, Nh, - 23 Homes
Lee, Ma, - 2200 Homes
Leicester, Ma, - 550 Homes
Lenox, Ma, - 1800 Homes
Liberty Hill Camping area-Greenland, Nh, - 74 Homes

Littleton, Ma, - 1900 Homes
Long Island Bridge Camp-Moultonboro, Nh, - 113 Homes
Ludlow, Vt, - 1000 Homes
Lunenberg, Vt, - 100 Homes
Homes
Lunenburg, Ma, - 1700 Homes
Lyman Meadows-Hinesburg, Vt, - 80 Homes
Manchaug, Ma, - 160 Homes
Manchester Manor Mhp-Hooksett, Nh, - 138 Homes
Manchester, Vt, - 1600 Homes
Manor Motel-Windham, Nh, - 30 Homes
Marlboro Elem Sch-Marlboro, Vt, - 1 Homes
Marlboro, Nh, - 350 Homes
Masquebec Hill Camp-Bridgewater, Nh, - 2 Homes
Menina Realty Trust-Salem, Nh, - 4 Homes
Meriden Village, Nh, - 50 Homes
Milford, Nh, - 2500 Homes
Milton Bradley Wood Prod.-Fairfax, Vt, - 1 Homes
Milton, Nh, - 300 Homes
Montague Ctr, Ma, - 160 Homes
Montgomery Ctr, Vt, - 125 Homes
Morrisville, Vt, - 1100 Homes
Mt.delight Childcare-Deerfield, Nh, - 2 Homes
Munson, Ma, - 1200 Homes
Northeast,- N. Woodstock, Nh, - 220 Homes
Nelson Elem. School-Nelson, Nh, - 1 Homes
New Hampshire College-Hooksett, Nh, - 9 Homes
New Hampton Elem. School-New Hampton, Nh, - 1 Homes
New Lite Church-Raymond, Nh, - 1 Homes
New London, Nh, - 900 Homes
New Market, Nh, - 1200 Homes
Newbury, Vt, - 200 Homes
Newmarket, Nh, - 1200 Homes
Newport Ctr, Vt, - 110 Homes
Newport, Nh, - 1400 Homes
No Salem Elem Sch-N Salem, Nh, - 1 Homes
No Walpole, Nh, - 150 Homes
No. Bennington, Vt, - 1000 Homes
No. Hartland, Vt, - 80 Homes
No. Swanzey, Nh, - 410 Homes
No. Walpole, Nh, - 150 Homes
North Charlestown, Nh, - 60 Homes
Northbrook Estates Sherburne, Vt, - 10 Homes
Northbrook Mhp Belmont, Nh, - 36 Homes
Northfield, Ma, - 200 Homes
Okemo Mtn Resort Ludlow, Vt, - 142 Homes
Old Farm Water Trust-Dover, Ma, - 22 Homes
Old Fort 4 Apart.-Charlestown, Nh, - 24 Homes
Orange, Ma, - 1500 Homes
Orford Elem & Middle School-Orford,Nh, - 2 Homes
Orford High School-Orford, Nh, - 2 Homes
Orleans, Vt, - 300 Homes
Palmer, Ma, - 1300 Homes
Paradise Point Nature Center-Hebron, Nh, - 1 Homes
Pats Peak Ski area-Henniker, Nh, - 7 Homes
Paxton, Ma, - 900 Homes
Pembroke, Nh, - 1900 Homes
Pepperell, Ma, - 2500 Homes
Peterboro, Nh, - 1400 Homes
Piermont Village School-Piermont, Nh, - 1 Homes
Pillsbury Lake-Webster, Nh, - 100 Homes
Pine Acres Mhp-Swanzey, Nh, - 122 Homes
Pine Haven Tea Room-Antrim, Nh, - 11 Homes
Pine Point Assoc. Northwood, Nh, - 19 Homes
Pine Valley Mhp, Vt, - 128 Homes
Pinehaven Tea Room & Cabins-Antrim, Nh, - 10 Homes
Pittsfield, Vt, - 27 Homes
Pittsford, Vt, - 425 Homes
Plainfield, Nh, - 100 Homes
Plainfield, Vt, - 300 Homes
Northeast,- Plymouth Village Water, - 900 Homes
Plymouth, Nh, - 850 Homes
Pomfret School-Pomfret, Vt, - 1 Homes
Poultney, Vt, - 470 Homes
Presbyterian Church-Bedford, Nh, - 2 Homes
Putney Inn, Vt, - 1 Homes
Rand Pond Campground- Goshen, Nh, - 126 Homes
Randolph Ctr, Vt, - 50 Homes

Randolph, Vt, - 1200 Homes
Readsboro, Vt, - 200 Homes
Red Fox Condos-Bristol, Nh, - 62 Homes
Richmond, Vt, - 500 Homes
River Bend Mhp-S. Royalton, Vt, - 9 Homes
Rochester, Vt, - 150 Homes
Rudy's Camp, Clarksville, Nh, - 35 Homes
Rumney Bible Conf. Rumney, Nh, - 3 Homes
Rupert Schools-Rupert, Vt, - 2 Homes
Russell, Ma, - 380 Homes
Rutland, Ma, - 780 Homes
Rutland, Rd #1, Vt, - 125 Homes
Rye Water Dist-Rye, Nh, - Homes
Sales Mhp-Rochester, Nh, - 80 Homes
Salisbury Elem Sch-Salisbury, Nh, - 1 Homes
Seasons on Mt Snow-Mt Snow, Vt, - 250 Homes
Sentinel Camp Tuftonboro, Nh, - 17 Homes
Sharon arts Center-Sharon, Nh, - 3 Homes
Shelburn Falls, Ma, - 700 Homes
Sherryland Park Inc-Tilton, Nh, - 35 Homes
Skandia Estates Ossipee, Nh, - 120 Homes
Skandia Shores-W. Ossipee, Nh, - 15 Homes
Slope & Shore New London, Nh, - 68 Homes
So Hadley, Ma, - 1400 Homes
So. Deerfield, Ma, - 1200 Homes
So. Royalton, Vt, - 200 Homes
So. Weare Mhp-So Weare, Nh, - 41 Homes
South Deerfield, Ma, - 1200 Homes
South Hadley Fd #2, - 1400 Homes
South Main Street-Warren, Nh, - 30 Homes
Southampton, Ma, - 380 Homes
Southern Nh Rc &D, - Homes
Southwick, Ma, - 1800 Homes
Spencer, Ma, - 1700 Homes
Sporthaven Mhp-Belchertown, Ma, - 54 Homes
Springfield, Vt, - 2200 Homes
Sterling, Ma, - 1500 Homes
Stewartstown School-Colebrook, Nh, - 1 Homes
Northeast,- Stockbridge, Ma, - 800 Homes
Stockbrige Elem. School-Stockbridge, Vt, - 1 Homes
Stowe Fd #4, - 43 Homes
Stowe Fire Dist. III, - 50 Homes
Stowe Village, - 300 Homes
StrattonMtn-Stratton, Vt, - 400 Homes
Sugar & Spice Presch-Weare, Nh, - 1 Homes
Sugar Hill Inn-Franconia, Nh, - 17 Homes
Sunapee, Nh, - 500 Homes
Sunderland, Ma, - 510 Homes
Sunrise Mtn. Village-Sherburne, Vt, - 175 Homes
Sunset Hill Inns-Sugar hill, Nh, - 3 Homes
Sutton, Vt, - 22 Homes
Tamarack Tennis Camp-Franconia, Nh, - 6 Homes
Templeton, Ma, - 1700 Homes
Terrace Condo. Assoc.-Hudson, Nh, - 25 Homes
The Inn at Danbury-Danbury, Nh, - 1 Homes
Thetford Elem. Schoo-Thetford, Vt, - 1 Homes
Thoomas Reed School-Candia, Nh, - 1 Homes
Three Rivers, Ma, - 900 Homes
Timber Ridge-Underhill, Vt, - 8 Homes
Townsend, Ma, - 1150 Homes
Trailside Condos-Londonderry, Nh, - 56 Homes
Troy, Nh, - 360 Homes
Tuftonboro Central School-Tuftonboro, Nh, - 1 Homes
Turners Falls, Ma, - 1800 Homes
Tuxbury Campground, - 200 Homes
Vershire Elem. School-Vershire, Vt, - 1 Homes
W Rupert Elem Sch.-W Rupert, Vt, - 1 Homes
W. Stockbridge, Ma, - 104 Homes
W. Swanzey Water Co-Chesterfield, Nh, - 50 Homes
Wagon Wheel Mhp-Londonderry, Nh, - 38 Homes
Waits River Valley Sch.-E Corinthe, Nh, - 1 Homes
Waitsfield Elem. School-Waitsfield,Vt, - 1 Homes
Waldorf School-Wilton, Nh, - 1 Homes
Wallingford, Vt, - 300 Homes
Warner, Nh, - 190 Homes
Waterville Water Coop-Waterville, Vt, - 26 Homes
Wayside Restaurant-Chester,Nh, - 4 Homes
Webasterville, Vt, - 120 Homes
Wells Memorial School-Harrisville, Nh, - 1 Homes
West Halifax Elem. School-W. Halifax, Vt, - 2 Homes
West Haven School-West Haven, Vt, - 1 Homes
West Rutland, Vt, - 800 Homes
West Stockbridge, Ma, - 104 Homes
West Windarl Mhp-Rochester, Nh, - 16 Homes
Northeast,- Westminister, Vt, - 60 Homes
Westminster Aqueduct Society, - 55 Homes
Westminster, Vt, - 10 Homes
Westwind Mhp Rochester, Nh, - 23 Homes
Westworths Location, - 23 Homes
Whatley, Ma, - 400 Homes
Whiting, Vt, - 23 Homes
Wilder, Vt, - 1000 Homes
Williamsburg, Ma, - 510 Homes
Williamstown, Ma, - 1600 Homes

Williston, Vt, - 1700 Homes
Wilmington, Vt, - 250 Homes
Wilton, Nh, - 700 Homes
Winchester, Nh, - 1200 Homes
Winding Brook-Stratham, Nh, - 51 Homes
Windsor, Vt, - 1080 Homes
Winnstock Condo-Gilford, Nh, - 36 Homes
Wolfboro, Nh, - 2000 Homes
Woodstock, Vt, - 670 Homes
Woodsville, Nh, - 600 Homes
Worcester, Vt, - 50 Homes
Worthington, Ma, - 160 Homes
Homes
Ohio, - Adams County Water, - 8000 Homes
Adena, - 500 Homes
Andover, - 400 Homes
Antwerp, - 500 Homes
Arcadia, - 50 Homes
Archbold, - 1600 Homes
Ashley, - 500 Homes
Attica, - 50 Homes
Baltic, - 400 Homes
Baltimore, - 600 Homes
Barnesville, - 800 Homes
Batavia, - 500 Homes
Beaver, - 75 Homes
Bellville, - 600 Homes
Belmont, - 350 Homes
Berlin Water Co., - 400 Homes
Bethseda, - 400 Homes
Betmar , - 120 Homes
Beverly, - 650 Homes
Blanchester, - 1400 Homes
Bloomdale, - 200 Homes
Bloomingberg, - 300 Homes
Bloomville, - 390 Homes
Ohio, - Bowerston, - 400 Homes
Bradner, - 450 Homes
Bucyrus, - 2700 Homes
Burr Oak, - 100 Homes
Burton, - 800 Homes
Butler, - 400 Homes
Byesville, - 4500 Homes
Caledonia, - 350 Homes
Canal Winchester, - 1100 Homes
Candlewood Lake, - 175 Homes
Cardington, - 650 Homes
Carey, - 2000 Homes
Carrol, - 175 Homes
Cedar Creek, - 60 Homes
Centerburg, - 550 Homes
Chardon, - 4000 Homes
Chauncey, - 500 Homes
Cinnamon Lake, - 100 Homes
Clear Fork, - 180 Homes
Clermont County W & Sw, - 8000 Homes
Coal Grove, - 400 Homes
Columbus, - 40000 Homes
Corning, - 300 Homes
Coshocton, - 3200 Homes
Crestline, - 1800 Homes
Crestwood, - 350 Homes
Cridersville, - 1000 Homes
Dalton, - 600 Homes
Damascas, - 50 Homes
Del-co Water, - 10000 Homes
Dillionvale, - 450 Homes
Dresden, - 700 Homes
East Muskingum Water Authority, - 3000 Homes
East Portersville, - 850 Homes
Eastview, - 325 Homes
EHCWA, - 2000 Homes
Erie-Huron Rural Water, - 3500 Homes
Falls Township, - 0 Homes
Fayette County, - 1000 Homes
Forest, - 650 Homes
Fostoria, - 3200 Homes
Fredericktown, - 900 Homes
Galion, - 3000 Homes
Gallia Rural Water, - 8000 Homes
Georgetown Water District, - 70 Homes
Glenmont, - 175 Homes
Ohio, - Glouster, - 900 Homes
Grafton, - 550 Homes
Grand Rapids, - 650 Homes
Granville, - 4000 Homes
Green Cove, - 300 Homes
Green Springs, - 500 Homes
Hanley Acres, - 40 Homes
Harveysberg, - 200 Homes
Heath, - 2650 Homes
Hebron, - 750 Homes
Hecla Water, - 6500 Homes
Hidden Lakes, - 1000 Homes
Highland County, - 2800 Homes
Hillsboro, - 2600 Homes

Hillsdale, - 100 Homes
Holloway, - 600 Homes
Hudson, - 2000 Homes
Inland, - 50 Homes
Jackson Co. Rural Water, - 2300 Homes
Jacksonville, - 275 Homes
Jefferson Regional Water, - 1500 Homes
Kelley's Island, - 400 Homes
Killbuck, - 300 Homes
Kingston, - 400 Homes
La Grange, - 550 Homes
Lake Co. Water, - 10000 Homes
Lake Logan, - 50 Homes
Lakeside, - 100 Homes
Lancaster, - 3300 Homes
Larve, - 325 Homes
Le-ax Water, - 6000 Homes
Leading Creek Water, - 1200 Homes
Leesburg, - 450 Homes
Leesville, - 50 Homes
Leona Falls, - 22 Homes
Lexington, - 1500 Homes
Licking County Water/Sewer Dist, - 600 Homes
Lincoln Fields, - 80 Homes
Lincoln Terrace, - 125 Homes
Little Hocking, - 3200 Homes
Lodi, - 1400 Homes
Logan, - 2200 Homes
Loudonville, - 1400 Homes
Lucas, - 350 Homes
Lynchburg, - 350 Homes
Madison, - 1100 Homes
Ohio, - Malta, - 700 Homes
Malvern, - 100 Homes
Manchester, - 800 Homes
Marblehead, - 450 Homes
Marengo, - 200 Homes
Marion County, - 150 Homes
Marshalville, - 400 Homes
Martins Ferry, - 3300 Homes
Mccarther, - 800 Homes
Mccomb, - 500 Homes
Mcconnelsville, - 950 Homes
Middle Point, - 250 Homes
Midwest, - 450 Homes
Millborne, - 35 Homes
Millersburg, - 1000 Homes
Mohican, - 50 Homes
Montpelier, - 1600 Homes
Morco, - 800 Homes
Mount Gilead, - 1200 Homes
Mt Olivett, - 0 Homes
Mt. Blanchard, - 450 Homes
Mt. Eaton, - 300 Homes
Mt. Orab, - 1700 Homes
Mt. Sterling, - 700 Homes
Nashville, - 70 Homes
Nelsonville, - 700 Homes
Nevada, - 350 Homes
New Concord, - 600 Homes
New Holland, - 350 Homes
New Lexington, - 200 Homes
New London, - 900 Homes
New Metamora, - 800 Homes
New Miami, - 800 Homes
New Straightsville, - 350 Homes
New Vienna, - 430 Homes
New Washington, - 400 Homes
Newcomerstown, - 1500 Homes
North Baltimore, - 1400 Homes
North Robinson, - 0 Homes
Northmor, - 350 Homes
Northwestern, - 300 Homes
Oak Harbor, - 1800 Homes
Oak Hil, - 2100 Homes
Oakdale, - 50 Homes
Oakwood, - 300 Homes
Old County Water Association, - 500 Homes
Ohio, - Old Straightsville, - 300 Homes
Ontario, - 1500 Homes
Orient, - 160 Homes
Orrville, - 2000 Homes
Ottawa, - 1800 Homes
Pataskala, - 2000 Homes
Paulding, - 1000 Homes
Perrysville, - 650 Homes
Pickerington, - 1700 Homes
Pike County Water, - 3300 Homes
Piketon, - 600 Homes
Pin Oak, - 130 Homes
Plain City, - 920 Homes
Plymouth, - 800 Homes
Portorsville, - 375 Homes
Puttman Co., - 2800 Homes
Rayland, - 215 Homes
Reno Area W & SW, - 2000 Homes

Reno Water, - 1100 Homes
Republic, - 300 Homes
Richland County, - 3000 Homes
River Valley, - 155 Homes
RICWA, - 12000 Homes
Ross County, - 10000 Homes
Rural Lorain Co. Water Auth., - 12000 Homes
Rushylvania, - 350 Homes
Russells Point, - 550 Homes
S. Perry Co. Water District, - 800 Homes
Sandusky Co. Water & Sewer, - 3000 Homes
Sardinia, - 300 Homes
Sciotio Couny Water, - 2800 Homes
Sebina, - 1100 Homes
Seneca Co., - 1 Homes
Senic Hills, - 50 Homes
Shawnee, - 300 Homes
Shelby, - 3000 Homes
Smithfield, - 200 Homes
Somerset, - 550 Homes
Southern Ohio Water Co., - 150 Homes
Spencerville, - 800 Homes
Springfield, - 3300 Homes
Springvalley, - 70 Homes
St. Clairsville, - 2500 Homes
Stryker, - 550 Homes
Sugar Creek, - 850 Homes
Sugar Grove, - 300 Homes
Ohio, - Sunday Creek, - 1100 Homes
Sunset, - 150 Homes
Swanton, - 1400 Homes
Tate Monroe Water Assoc., - 9000 Homes
Thornville, - 320 Homes
Tiltionsville, - 700 Homes
Tri County Water, - 660 Homes
Trimble, - 225 Homes
Troy, - 3000 Homes
Tuppers Plains-chester Water, - 4500 Homes
Upper Sandusky, - 2400 Homes
Utica, - 500 Homes
Van Wert, - 3100 Homes
Wakeman, - 350 Homes
Walnut Creek, - 450 Homes
Walnut Hills Water Association, - 150 Homes
Wapakonet, - 3200 Homes
Warren Water, - 1400 Homes
Warsaw, - 300 Homes
Washington Court House, - 320 Homes
Waverly, - 2000 Homes
Wellington, - 1500 Homes
West Alexandria, - 600 Homes
West Jefferson, - 900 Homes
West Lafayettee, - 1000 Homes
West Milton, - 1800 Homes
West Salem, - 700 Homes
West Union, - 1500 Homes
West Unity, - 550 Homes
Westerville, - 3300 Homes
Westfield Center, - 400 Homes
Willard, - 2250 Homes
Williams County Engineer, - 1000 Homes
Williamsburg, - 800 Homes
Winchester, - 475 Homes
Wood County, - 2800 Homes
Wood Valley, - 160 Homes
Woodville, - 800 Homes
Wooster, - 3000 Homes
Yorkville, - 560 Homes
Zanesville, - 12000 Homes
Homes
Homes
Oklahoma, - Adair Co Rwd #2, - 265 Homes
Adamson Water, - 1500 Homes
Afton, - 515 Homes
Oklahoma, - Alex Town, - 220 Homes
Alfalfa Co Rwd #1, - 590 Homes
Aline Pwa, - 170 Homes
Allen Pwa, - 502 Homes
Alva Pwa, - 2000 Homes
Anadarko Pwa, - 3000 Homes
Antlers Pwa, - 1400 Homes
Apache Pwa, - 790 Homes
Arapaho Pwa, - 335 Homes
Arnett Pwa, - 320 Homes
Asher Pwa, - 210 Homes
Atoka Co Rwd #4, - 1200 Homes
B & B Water, - 10 Homes
Beaver Co Rwd #1, - 220 Homes
Beckham Co Rwd #1, - 760 Homes
Beckham Co Rwd #2, - 220 Homes
Beckham Co Rwd #3, - 230 Homes
Big Cabin , - 185 Homes
Billings , - 236 Homes
Binger , - 385 Homes
Blackburn Skeedee Water, - 200 Homes
Blackwell Rwd, - 449 Homes

Blair , - 500 Homes
Blanchard Municipal Auth, - 900 Homes
Blue Jacket, - 124 Homes
Boiling Srpings Estates, - 9 Homes
Boise City , - 800 Homes
Boswell , - 550 Homes
Bowlegs-Lima Rwd Inc, - 752 Homes
Boynton , - 280 Homes
Bradley Water, - 85 Homes
Bressie Water Inc, - 70 Homes
Bryan Co Rwd #2, - 1900 Homes
Buckhorn Rwd, - 280 Homes
Burbank , - 75 Homes
Burns Flat , - 600 Homes
Butler , - 207 Homes
Byers , - 110 Homes
Byron Amorita Auth, - 0 Homes
C & W Water Auth, - 0 Homes
Cache , - 519 Homes
Caddo Co Rwd #1, - 115 Homes
Caddo Co Rwd #3, - 1600 Homes
Calumet , - 280 Homes
Calvin , - 163 Homes
Canadian Co Rwd #1, - 310 Homes
Oklahoma, - Canton , - 480 Homes
Carmen , - 250 Homes
Carney , - 306 Homes
Cement , - 300 Homes
Chandler , - 1340 Homes
Chattanooga , - 299 Homes
Checotah , - 1375 Homes
Cherokee Co Rwd #11, - 900 Homes
Cherokee Co Rwd #13, - 476 Homes
Cherokee Co Rwd #7, - 238 Homes
Cheyenne Utility Auth, - 483 Homes
Choctaw Co Rwd #1, - 650 Homes
Choctaw Co Rwd #2, - 90 Homes
City of Barnsdal, - 900 Homes
City of Beggs, - 660 Homes
City of Bokchito, - 380 Homes
City of Cordel, - 1600 Homes
City of Cushing, - 4718 Homes
City of Dill City, - 300 Homes
City of Elgin, - 540 Homes
City of Erick, - 600 Homes
City of Grandfield, - 750 Homes
City of Hooker, - 790 Homes
City of Hugo, - 3000 Homes
City of Lehigh, - 182 Homes
City of Maud, - 478 Homes
City of Minco, - 650 Homes
City of Morris, - 600 Homes
City of Pawhuska, - 2200 Homes
City of Pond Creek, - 560 Homes
City of Shattuck, - 740 Homes
City of Skiatook, - 2500 Homes
City of Spencer, - 1100 Homes
City of Tonkawa, - 1300 Homes
City of Wagoner, - 3100 Homes
City of Wetumka, - 425 Homes
City of Wewoka, - 1600 Homes
City of Yale, - 630 Homes
CKT Rural Water, - 650 Homes
Clavin , - 163 Homes
Cleo Springs, - 190 Homes
Cleveland Pwa, - 800 Homes
Clifton Mobile Home Park, - 30 Homes
Comanche Co Rwd #1, - 917 Homes
Comanche Co Rwd #2, - 610 Homes
Comanche Co Rwd #3, - 400 Homes
Oklahoma, - Commerce , - 2426 Homes
Cordell , - 1100 Homes
Covington Util Auth, - 330 Homes
Coyle , - 210 Homes
Craig Co Rwd #2, - 965 Homes
Craig Co Rwd #3, - 220 Homes
Creek Co Rwd #1, - 1667 Homes
Creek Co Rwd #10, - 16 Homes
Creek Co Rwd #2, - 3102 Homes
Creek Co Rwd #3, - 1038 Homes
Creek Co Rwd #5, - 630 Homes
Creek Co Rwd #7, - 650 Homes
Crescent , - 700 Homes
Creta Water Corp, - 0 Homes
Custer Co Rwd #3, - 391 Homes
Cyril , - 515 Homes
Dacoma , - 0 Homes
Davenport Utility Auth, - 400 Homes
Delaware Co Rwd #1, - 269 Homes
Delaware Co Rwd #3, - 291 Homes
Dewar, - 425 Homes
Dewey , - 1600 Homes
Dougherty , - 119 Homes
Dover , - 180 Homes
Dripping Springs , - 169 Homes
Drummond , - 188 Homes

Dustin , - 155 Homes
Eldorado , - 358 Homes
Elgin , - 313 Homes
Elmore City , - 350 Homes
Fairfax , - 920 Homes
Fairmont Utilities, - 65 Homes
Fairview Util Auth, - 1350 Homes
Fargo , - 225 Homes
Faxon Water, - 70 Homes
Fifty-one East Inc, - 515 Homes
Fletcher , - 500 Homes
Forgan , - 255 Homes
Fort Oakland Uti, - 120 Homes
Foss , - 52 Homes
Francis , - 150 Homes
Frederick , - 800 Homes
Ft Supply Utilities, - 235 Homes
Gans , - 230 Homes
Garber Municipal Auth, - 410 Homes
Garfield Co Rwd #1, - 180 Homes
Oklahoma, - Garfield Co Rwd #5, - 300 Homes
Garvin Co Rwd #1, - 432 Homes
Garvin Co Rwd #2, - 370 Homes
Garvin Co Rwd #4, - 550 Homes
Garvin Co Rwd #6, - 665 Homes
Geary , - 692 Homes
Geronimo , - 370 Homes
Glenco , - 235 Homes
Goldsby Water, - 315 Homes
Goltry, - 166 Homes
Goodwell , - 300 Homes
Gotebo , - 160 Homes
Gracemont , - 220 Homes
Grady Co Rwd #1, - 113 Homes
Grady Co Rwd #2, - 169 Homes
Grady Co Rwd #6, - 850 Homes
Grady Co Rwd #7, - 900 Homes
Grant Co Rwd #1, - 115 Homes
Greenfield Util Co, - 80 Homes
Hallet , - 70 Homes
Hammond , - 250 Homes
Hanna , - 121 Homes
Hardesty Municipa, - 200 Homes
Harman Co Rwd #2, - 500 Homes
Harrah , - 905 Homes
Heavener Utility Auth, - 1100 Homes
Helena , - 250 Homes
Hennessey , - 1040 Homes
Hi-point Water, - 15 Homes
Holdenville , - 2360 Homes
Hollis , - 1250 Homes
Hooker , - 780 Homes
Hughes Co Rwd #2, - 420 Homes
Hughes Co Rwd #4, - 236 Homes
Hughes Co Rwd #6, - 300 Homes
Hugo , - 2876 Homes
Hulbert , - 420 Homes
Hunter Co , - 390 Homes
Indianola Water Co, - 520 Homes
Jackson Co Water, - 816 Homes
Jay, - 855 Homes
Jefferson Co Rwd #1, - 1520 Homes
Johnson Co Rwd #2, - 310 Homes
Johnston Co Rwd #3, - 725 Homes
Kansas , - 295 Homes
Kay Co Rwd #2, - 20 Homes
Oklahoma, - Kay Co Rwd #3, - 390 Homes
Keota , - 270 Homes
Ketchum, - 800 Homes
Keyes , - 200 Homes
Kickapoo, - 25 Homes
Kingfisher Co Rwd #3, - 100 Homes
Kingston , - 600 Homes
Konawa , - 600 Homes
Kreba Water, - 700 Homes
Kremlin , - 140 Homes
Kusa Rural Water, - 70 Homes
Kusa Rwd, - 51 Homes
Kusa Rwd #3, - 54 Homes
Laboma , - 280 Homes
Lamont , - 250 Homes
Langston , - 250 Homes
Latimer Co Rwd #1, - 1500 Homes
Latimer Co Rwd #4, - 146 Homes
Lavern , - 450 Homes
Lee Creek Rwd, - 90 Homes
Leedey , - 271 Homes
Leflore Co Rwd #14, - 1900 Homes
Leflore Co Rwd #3, - 580 Homes
Leflore Co Rwd #5, - 690 Homes
Lenapah Water, - 180 Homes
Lexington , - 746 Homes
Lincoln Co Rwd #3, - 230 Homes
Lincoln Co Rwd #4, - 765 Homes
Lindsey , - 1500 Homes
Logan Co Rwd #1, - 650 Homes

Logan Co Rwd #3, - 650 Homes
Logntown Rwd #1, - 1400 Homes
Lone Chimney Water Assoc, - 55 Homes
Lone Wolfe , - 299 Homes
Longdale , - 175 Homes
Longtown Rwd #1, - 1400 Homes
M & L Water, - 662 Homes
Madill Water, - 3000 Homes
Major Co Rwd #1, - 417 Homes
Mangum Utility Auth, - 2000 Homes
Manitou Water Dept, - 120 Homes
Mannford , - 650 Homes
Marland , - 100 Homes
Marlow , - 2400 Homes
Marshall Co Water Corp, - 3200 Homes
Martha Utility, - 90 Homes
Oklahoma, - Maud , - 495 Homes
Mayes Co Rwd #2, - 1670 Homes
Mayes Co Rwd #3, - 715 Homes
Mayes Co Rwd #5, - 948 Homes
Mayes Co Rwd #6, - 1200 Homes
Mayes Co Rwd #9, - 600 Homes
Maysville , - 470 Homes
Mcclain Co Rwd #1, - 30 Homes
Mcclain Co Rwd #3, - 60 Homes
Mcclain Co Rwd #7, - 320 Homes
Mcclain Co Rwd #8, - 430 Homes
Mccurtain Co Rwd #1, - 450 Homes
Mcintosh Co Rwd #10, - 210 Homes
Mcintosh Co Rwd #2, - 840 Homes
Mcintosh Co Rwd #5, - 357 Homes
Mcintosh Co Rwd #8, - 943 Homes
Mcintosh Co Rwd #9, - 280 Homes
Mcloud , - 525 Homes
Medford , - 700 Homes
Medicine Park , - 200 Homes
Meeker , - 400 Homes
Meno , - 96 Homes
Minco , - 680 Homes
Monroe Water Corp, - 135 Homes
Morr Water Inc, - 365 Homes
Morrison , - 330 Homes
Mountain Fork Water Supply, - 1430 Homes
Mountain View , - 500 Homes
Mt Fork Water Suply, - 1500 Homes
Murray Co Rwd #1, - 1400 Homes
Muskogee Co Rwd #1, - 800 Homes
Muskogee Co Rwd #11, - 80 Homes
Muskogee Co Rwd #3, - 268 Homes
Muskogee Co Rwd #6, - 600 Homes
Nash , - 168 Homes
Noble Co Rwd #1, - 300 Homes
North Blaine Water, - 724 Homes
Nowata Co Rwd #1 (Consol), - 415 Homes
Nowata Co Rwd #6, - 231 Homes
Nowata Municipal Auth, - 1900 Homes
Oilton , - 560 Homes
Ok Rural Water, - 568 Homes
Okeene , - 800 Homes
Okfuskee Co Rwd #2, - 900 Homes
Okfuskee Co Rwd #3, - 610 Homes
Okmulgee Co Rwd #1, - 663 Homes
Oklahoma, - Okmulgee Co Rwd #2, - 620 Homes
Okmulgee Co Rwd #3, - 640 Homes
Okmulgee Co Rwd #4, - 575 Homes
Okmulgee Co Rwd #5, - 250 Homes
Okmulgee Co Rwd #6, - 2150 Homes
Okmulgee Co Rwd #7, - 840 Homes
Olustee Pwa, - 220 Homes
Onapa Rwd #2, - 832 Homes
Osage Co Rwd #15, - 1300 Homes
Osage Co Rwd #3, - 121 Homes
Osage Co Rwd #5, - 141 Homes
Osage Co Rwd #9, - 106 Homes
Osage Indian Complex, - 5 Homes
Osage Tribal Council Meeting, - 0 Homes
Otoe/Missouri Tribe, - 60 Homes
Paoli , - 270 Homes
Pawnee Co Rwd #1, - 703 Homes
Pawnee Co Rwd #2, - 600 Homes
Pawnee Co Rwd #3, - 265 Homes
Pawnee Co Rwd #4, - 200 Homes
Payne Co Rwc #3, - 700 Homes
Payne Co Rwd #1, - 150 Homes
Payne Co Rwd #3, - 740 Homes
Perkins , - 950 Homes
Perry , - 2500 Homes
Picher , - 650 Homes
Pittsburg Co Rwd #1, - 1100 Homes
Pittsburg Co Rwd #14, - 300 Homes
Pittsburg Co Rwd #5, - 320 Homes
Pittsburg Co Rwd #6, - 320 Homes
Pittsburg Co Rwd #7, - 730 Homes
Pontotoc Co Rwd #3, - 535 Homes
Pontotoc Co Rwd #6, - 300 Homes
Pontotoc Co Rwd #7, - 1200 Homes

Pontotoc Co Rwd #8, - 700 Homes
Pontotoc Co Rwd #9, - 296 Homes
Porum , - 1114 Homes
Poteau Valley Improvement Authority, - 369 Homes
Pottawatomie Co , - 273 Homes
Purcell , - 1449 Homes
Pushmataha Co Rwd #1, - 375 Homes
Pushmataha Co Rwd #2, - 364 Homes
Pushmataha Co Rwd #3, - 1200 Homes
Pushmataha Co Rwd #5, - 178 Homes
Pvia, - 325 Homes
Quapaw , - 342 Homes
Oklahoma, - Quentin , - 500 Homes
Quinlan Rural Water, - 60 Homes
Quinton , - 495 Homes
R & C Water Auth, - 300 Homes
Ralston Water Inc, - 53 Homes
Ramona , - 350 Homes
Ratliff City , - 114 Homes
Ravia , - 250 Homes
Red Oak , - 310 Homes
Red Rock , - 100 Homes
Reydon Development Corp, - 96 Homes
Ringwood , - 180 Homes
Ripley , - 190 Homes
Roger Mills Co Rwd #2, - 450 Homes
Rogers Co Rwd #4, - 1753 Homes
Roosevelt , - 220 Homes
Rush Springs , - 650 Homes
Ryan , - 475 Homes
S. Coffeyville , - 400 Homes
Salem , - 453 Homes
Sapulpa Rural Water Co, - 2060 Homes
Saskawa , - 64 Homes
Seiling Pwa, - 344 Homes
Seminole Co Rwd #3, - 400 Homes
Seminole Co Rwd #5, - 62 Homes
Sequoyah Co Rwd #3, - 328 Homes
Sequoyah Co Rwd #4, - 303 Homes
Sequoyah Co Rwd #5, - 370 Homes
Sequoyah Co Rwd #7, - 1193 Homes
Sequoyah Co Water Auth, - 3275 Homes
Shady Grove Rwd #5, - 400 Homes
Shilder , - 250 Homes
Skiatook , - 1223 Homes
Soper , - 175 Homes
Sperry Util Serv Auth, - 630 Homes
Spiro East Water, - 1000 Homes
St Louis Utility Co, - 72 Homes
Stephens Co Rwd #1, - 570 Homes
Stephens Co Rwd #3, - 541 Homes
Stephens Co Rwd #5, - 975 Homes
Sterling , - 297 Homes
Stratford, - 700 Homes
Stroud , - 1200 Homes
SW Water Inc, - 200 Homes
Tackerville Rwd, - 816 Homes
Talihina , - 700 Homes
Oklahoma, - Tannehill Water Co, - 350 Homes
Tecumseh Utility Auth, - 2200 Homes
Temple Util Auth, - 682 Homes
Terlton, - 496 Homes
Terrell , - 225 Homes
Texhoma , - 400 Homes
Thirsty Rural Water, - 130 Homes
Thomas , - 600 Homes
Tillman Co Rwd #1, - 600 Homes
Tipton, - 400 Homes
Town of Alex, - 240 Homes
Town of Aline, - 144 Homes
Town of Beaver, - 860 Homes
Town of Bennington, - 165 Homes
Town of Boswel, - 350 Homes
Town of Braman, - 160 Homes
Town of Bristow, - 2000 Homes
Town of Chelsea, - 900 Homes
Town of Cleo Springs, - 169 Homes
Town of Cleveland, - 650 Homes
Town of Collinsville, - 3600 Homes
Town of Cyri, - 550 Homes
Town of Depew, - 250 Homes
Town of Faxon, - 44 Homes
Town of Gage, - 230 Homes
Town of Granite, - 560 Homes
Town of Hardesty, - 120 Homes
Town of Hennessey, - 1400 Homes
Town of Hominy, - 800 Homes
Town of Hooker, - 800 Homes
Town of Hunter, - 95 Homes
Town of Jennings, - 183 Homes
Town of Lamont, - 250 Homes
Town of Macomb, - 58 Homes
Town of Mangum, - 2000 Homes
Town of Manitou, - 120 Homes
Town of Muldrow, - 1100 Homes
Town of Okarche, - 570 Homes

Town of Paoli, - 225 Homes
Town of Washington, - 220 Homes
Town of Wynona, - 230 Homes
Tri-Co Devel Auth, - 55 Homes
Tri-County Rwd #2, - 1460 Homes
Tri-County Rwd #3, - 1359 Homes
Tryon , - 230 Homes
Tupelo, - 237 Homes
Oklahoma, - Tuttle , - 953 Homes
Tyron , - 200 Homes
Tyrone , - 315 Homes
Union City, - 300 Homes
Verden PWA, - 304 Homes
Vian PWA, - 550 Homes
Vivian Rwd #6, - 446 Homes
W. Carter Co W&S Corp, - 600 Homes
Wagoner Co Rwd #4, - 3800 Homes
Wagoner Co Rwd #5, - 1500 Homes
Wagoner Co Rwd #8, - 362 Homes
Wagoner Co Rwd #9, - 1400 Homes
Wakita , - 225 Homes
Walters , - 700 Homes
Wanette , - 210 Homes
Wapanuka , - 125 Homes
Wash , - 168 Homes
Washington Co Rwd #1, - 400 Homes
Washington Co Rwd #2, - 800 Homes
Washington Co Rwd #3, - 3300 Homes
Washington , - 139 Homes
Washita Co Rwd #2, - 550 Homes
Watts , - 370 Homes
Waurika , - 706 Homes
Wayne , - 375 Homes
Waynoka Utility Auth, - 600 Homes
Welch , - 217 Homes
Weleetka , - 450 Homes
Wellston , - 400 Homes
West Davis Rwd, - 320 Homes
West Ft Supply Utility, - 200 Homes
West Siloam Springs , - 250 Homes
Wewoka , - 1600 Homes
White Eagle Water, - 321 Homes
Wilburton , - 1300 Homes
Wilson , - 750 Homes
Woods Co Rwd #2, - 270 Homes
Woodward Co Rwd #2, - 263 Homes
Wright City , - 350 Homes
Wynona, - 253 Homes
Yale , - 619 Homes
Homes
Oregon, - Adair Village, - 1000 Homes
Adams, City of, - 100 Homes
Adrian, City of, - 90 Homes
Agate Water System, - 200 Homes
Oregon, - Amity, - 380 Homes
Apache Water Assn., - 300 Homes
Arlington, City of, - 125 Homes
Athena, City of, - 430 Homes
Aurora, City of, - 225 Homes
Avion Water Dist, - 3010 Homes
Baker, City of, - 3000 Homes
Bandon, - 1440 Homes
Banks, City of, - 300 Homes
Barlow, City of, - 200 Homes
Bay City, City of, - 400 Homes
Bear Creek Water Dist, - 53 Homes
Beavercreek Water Dist., - 118 Homes
Birkenfield Water Assn., - 70 Homes
Bley-Washington Heights Wtr Sys., - 17 Homes
Bly, City of, - 103 Homes
Boardman, City of, - 800 Homes
Bonanza, City of, - 170 Homes
Boulder Creek Water Assn, - 113 Homes
Brighton, City of, - 39 Homes
Brightwood Water Dist., - 31 Homes
Brookings, City of, - 1600 Homes
Brownsville, - 600 Homes
Buell Red Prairie, - 700 Homes
Cannon Beach, City of, - 250 Homes
Canyon City, City of, - 276 Homes
Canyonville, - 500 Homes
Carlton, City of, - 663 Homes
Cascade Locks, City of, - 350 Homes
Cave Junction, City of, - 514 Homes
Central Point, City of, - 2500 Homes
Cheno- Coop, - 900 Homes
Chiloquin, City of, - 280 Homes
Christmas Valley, City of, - 167 Homes
Cimm on City, City of, - 145 Homes
City of Glendale, - 300 Homes
Clatskanie, City of, - 906 Homes
Coburg, City of, - 350 Homes
Cold Springs Wtr Assn, - 10 Homes
Colton, City of, - 350 Homes
Columbia City, City of, - 380 Homes
Condon, City of, - 415 Homes

Coquille, - 2280 Homes
Cove Orchard, City of, - 125 Homes
Cove, City of, - 205 Homes
Crescent, City of, - 300 Homes
Oregon, - Creswell, City of, - 800 Homes
Crooked River Ranch, City of, - 600 Homes
Crystal Springs, City of, - 128 Homes
Dallas, - 3250 Homes
Dayton, - 550 Homes
Dayville, City of, - 77 Homes
Depoe Bay, - 715 Homes
Deschutes Valley Water Dist, - 3000 Homes
Detroit, - 250 Homes
Dexter Water Dist., City of, - 70 Homes
Diamond Hill Water, - 100 Homes
Donald, - 275 Homes
Drain, City of, - 500 Homes
Dufur, - 300 Homes
Dundee, - 550 Homes
East Suburban, City of, - 3190 Homes
Echo, City of, - 253 Homes
Elgin, City of, - 488 Homes
Elkton, - 80 Homes
Enterprise, City of, - 900 Homes
Estacada, - 800 Homes
Fairview, - 1000 Homes
Falls City, - 350 Homes
Firs Water System, - 53 Homes
Fischers Mobile Home P k, - 35 Homes
Florence, - 1600 Homes
Forest Park, - 87 Homes
Fossil, City of, - 320 Homes
Garibaldi, City of, - 480 Homes
Gaston, City of, - 252 Homes
Gates, City of, - 225 Homes
Gerhart, City of, - 1030 Homes
Gervais, - 275 Homes
Gilchrist, City of, - 130 Homes
Gladstone, City of, - 2580 Homes
Glendale, - 322 Homes
Glenden Beach, City of, - 1780 Homes
Glide, - 335 Homes
Goble, City of, - 35 Homes
Gold Beach, - 1100 Homes
Gold Hill, City of, - 350 Homes
Government Camp Water, - 325 Homes
Grand Ronde, - 580 Homes
Granite, City of, - 50 Homes
Grass Valley, City of, - 83 Homes
Haines, City of, - 175 Homes
Oregon, - Halfway, City of, - 330 Homes
Halsey, City of, - 270 Homes
Hans Grousser Water System, - 13 Homes
Harbor Water Dist, - 1300 Homes
Harrisburg, - 750 Homes
Hebo, - 38 Homes
Heceta Water, - 550 Homes
Heppner, City of, - 714 Homes
Hidden Valley, City of, - 82 Homes
Hines, City of, - 400 Homes
Hood River, City of, - 1780 Homes
Hubbard, City of, - 600 Homes
Huntington, City of, - 257 Homes
Ice Fountain, City of, - 1800 Homes
Idanha, City of, - 84 Homes
Imbler, City of, - 124 Homes
Independence, - 870 Homes
Ione, City of, - 141 Homes
Irrigon, City of, - 20 Homes
Island City, City of, - 295 Homes
Jacksonville, City of, - 757 Homes
Jefferson, City of, - 700 Homes
Jetteview Water, - 9 Homes
John Day, City of, - 700 Homes
Joseph, City of, - 600 Homes
Junction City Water , - 1150 Homes
Juniper Water Dist, - 770 Homes
Keno Water Dist, - 85 Homes
Kent, City of, - 8 Homes
Kerby Water System, - 45 Homes
Kernville Gleneden Water, - 1200 Homes
Knappa Water Dist, - 430 Homes
La Casa Mia, City of, - 45 Homes
Lafayette, - 504 Homes
Lakeside, - 320 Homes
Lakeview, City of, - 1438 Homes
Lakewood Utilities, - 200 Homes
Lamplighter Water Dist, - 16 Homes
Langlois Water Dist, - 70 Homes
Lebanon, City of, - 2000 Homes
Lexington, City of, - 100 Homes
Lincoln City, City of, - 3200 Homes
Lombard Water Dist, - 130 Homes
Long Creek, City of, - 70 Homes
Lowell, City of, - 250 Homes
Luckiamute, - 1325 Homes

Oregon, - Lyons-Mehama, City of, - 640 Homes
Madras, City of, - 799 Homes
Manzanita, City of, - 370 Homes
Maupin, City of, - 114 Homes
Mcnary Oaks, City of, - 122 Homes
Mcnulty, City of, - 900 Homes
Metolious River Lodge, - 15 Homes
Midland, City of, - 34 Homes
Mill City, City of, - 700 Homes
Milton Freewater, City of, - 1800 Homes
Mitchell, City of, - 44 Homes
Molalla, - 450 Homes
Monmouth, - 1330 Homes
Monroe, - 195 Homes
Monument, City of, - 70Oregon, - Moro, City of, - 137 Homes
Mosier, City of, - 114 Homes
Mountain Air Water Dist, - 70 Homes
Mt Angel Abbey, - 100 Homes
Mt Angel, City of, - 730 Homes
Mt Vernon, City of, - 220 Homes
Myrtle Creek, City of, - 1200 Homes
Myrtle Point, - 903 Homes
Nesika Beach Water Dist, - 350 Homes
Neskowin, - 410 Homes
Nestled in Hills, - 25 Homes
Netarts, City of, - 570 Homes
Newport, - 3100 Homes
North Plains, City of, - 380 Homes
North Powder, City of, - 205 Homes
Nyssa, - 800 Homes
Oak Grove, City of, - 715 Homes
Oakland, - 300 Homes
Oakridge, City of, - 1335 Homes
Oaks Water Assn., City of, - 77 Homes
Oceanside, - 612 Homes
Olney Water Assn., - 156 Homes
Ontario, City of, - 2960 Homes
Orchard Heights Water, - 80 Homes
Oregon Shores, City of, - 69 Homes
Pacific City, - 810 Homes
Paisley, City of, - 120 Homes
Parkdale, City of, - 180 Homes
Pelican Community Water, - 40 Homes
Perrydale, - 870 Homes
Philomath, City of, - 900 Homes
Oregon, - Phoenix, City of, - 685 Homes
Pilot Rock, City of, - 450 Homes
Pinecrest, City of, - 42 Homes
Pioneer Villa , - 25 Homes
Polehn Heights, - 44 Homes
Port of Morrow, City of, - 50 Homes
Port Orford, - 457 Homes
Powers, City of, - 322 Homes
Prairie City, City of, - 700 Homes
Prospect, City of, - 14 Homes
Quincy Water Assn, - 130 Homes
Rainier, City of, - 1170 Homes
Reedsport, - 2200 Homes
Richland, City of, - 120 Homes
Rickrea, - 400 Homes
Riddle, - 380 Homes
Rink Creek, - 77 Homes
Roats Water Dist, - 1010 Homes
Roberts Creek Water Dist, - 1700 Homes
Rogue River, - 1000 Homes
Rufus, City of, - 100 Homes
Safford Tumalo, City of, - 14 Homes
Salmon Valley Water, - 237 Homes
Scappoose, City of, - 1200 Homes
Scio, City of, - 300 Homes
Scotts Mills, City of, - 90 Homes
Seal Rock, - 1512 Homes
Selma Water Co-op, - 45 Homes
Seneca, City of, - 110 Homes
Shady Cove, City of, - 300 Homes
Shaniko, City of, - 13 Homes
Sheridan, - 1670 Homes
Sherwood, City of, - 620 Homes
Siletz, City of, - 435 Homes
Siltcoos Water, - 442 Homes
Silverlake, City of, - 100 Homes
Silverton, City of, - 1250 Homes
Sisters, City Of, - 441 Homes
Sodaville, City of, - 90 Homes
Southwood Park , - 297 Homes
Sprague Water Board, - 48 Homes
Spray, City of, - 110 Homes
St Helens,City of, - 2966 Homes
St Paul, City of, - 175 Homes
Stanfield, City of, - 800 Homes
Stayton, City of, - 1700 Homes
Oregon, - Sublimity, City of, - 325 Homes
Suburban East Salem Water, - 3200 Homes
Sumpter, City of, - 210 Homes
Sunridge Water Dist, - 29 Homes

Sutherlin, City of, - 1800 Homes
SW Lincoln Water, - 1012 Homes
Sweet Home, City of, - 1021 Homes
Talent, City of, - 925 Homes
Terrebonne, City of, - 370 Homes
The Dalles, City of, - 300 Homes
Tillamook Wtr, City of, - 1600 Homes
Tokatee, - 60 Homes
Toledo, City of, - 1700 Homes
Tri City, - 1300 Homes
Tualatin Valley Water, - 37000 Homes
Turner, - 411 Homes
Twin Oaks Water Dist., City of, - 13 Homes
Tygh Valley, City of, - 101 Homes
Ukiah, City of, - 100 Homes
Umatilla, City of, - 300 Homes
Umpqua Basin Water Assn., - 2300 Homes
Union Gap, - 65 Homes
Union, City of, - 810 Homes
Unity, City of, - 100 Homes
Vale, City of, - 490 Homes
Venata, City of, - 1000 Homes
Vernonia, City of, - 850 Homes
Waldport, - 975 Homes
Wallowa, City of, - 450 Homes
Warren, City of, - 471 Homes
Warrenton, City of, - 800 Homes
Wasco, City of, - 185 Homes
Waterlab/Perrydale Water Company, - 400 Homes
Western Hills, City of, - 110 Homes
Weston, City of, - 380 Homes
Westwood Village Co-op, - 61 Homes
Wheeler, City of, - 168 Homes
Wickiup, City of, - 500 Homes
Willamina, - 632 Homes
Wilsonville, City of, - 3100 Homes
Winema, - 20 Homes
Winston-Dillard Water Dist, - 1522 Homes
Wolf Creek, City of, - 100 Homes
Yachats, City of, - 600 Homes
Yaina Water Dist, - 13 Homes
Yamhill, City of, - 350 Homes
Oregon, - Yoncalla, - 337 Homes
Zig Zag Water, City of, - 70 Homes
Homes
Homes
Pennsylvania, 64 Water Co, - 130 Homes
Aaronsburg Water Pipes, - 210 Homes

Adams Twp. Water Auth., - 560 Homes
Adamstown Boro, - 420 Homes
Akron Boro, - 1750 Homes
Albion Boro Water, - 700 Homes
Alburtis Boro Water, - 700 Homes
Alexandria Boro Water Authority, - 360 Homes
Allensville Water Auth., - 168 Homes
Amsbry Water Auth., - 25 Homes
Ardentsville Mun Authority, - 325 Homes
Arenotsville Boro Water, - 350 Homes
Aspinwall Borough, - 2200 Homes
Atgen Boro, - 310 Homes
Bainbridge Water Authority, - 290 Homes
Baresburo Boro Water, - 2000 Homes
Bear Municipal Authority, - 1100 Homes
Beaver Springs Water Authority, - 350 Homes
Beaverdale Heights Water Coop., - 23 Homes
Beech Creek Water, - 800 Homes
Belle Vernon Authority, - 1200 Homes
Bellefonte Boro Water, - 2100 Homes
Bendersville Water Co, - 230 Homes
Bentleyville Mun. Auth., - 1200 Homes
Berlin Borough, - 1000 Homes
Biglerville Boro Water, - 450 Homes
Birdsboro Boro Water, - 2400 Homes
Bloomfield Water Auth, - 380 Homes
Blossburg Boro Auth., - 750 Homes
Blue Ball Mun Auth, - 285 Homes
Blue Ball Water Auth, - 285 Homes
Blue Mt Billage Water Assoc, - 16 Homes
Blythe Twp Water Auth, - 2700 Homes
Boggs Twp Water, - 25 Homes
Bonesville Boro Mun Auth, - 500 Homes
Boro of Bally Water, - 750 Homes
Boro of Topton Water, - 830 Homes
Boyers Water Co, - 74 Homes
Boyertown Boro Water, - 2850 Homes
Brackenridge Boro, - 1500 Homes
Braddock Mun Auth, - 900 Homes
Brady Twp. Water Auth., - 400 Homes
Pennsylvania, Brent Water Assoc., - 25 Homes
Brookeville Mun Auth, - 2400 Homes
Brookside Water Assoc, - 56 Homes
Brookville Mun Aurh, - 2200 Homes
Buffalo Twp Mun Auth, - 1800 Homes
Buhl Community Water Assoc., - 56 Homes
Canton Boro Auth, - 800 Homes
Carmichaels Mun. Auth., - 1500 Homes

Carrol Valley Water Auth, - 200 Homes
Carrolltown Boro Water, - 500 Homes
Cassandra Boro Water, - 85 Homes
Castle Rock Water Assn, - 50 Homes
Central City Water Auth., - 880 Homes
Centre Hall Boro Water, - 560 Homes
Cheswick Borough, - 900 Homes
Chicora Boro, - 400 Homes
Christiana Boro Auth, - 360 Homes
Citizens Water Co., - 485 Homes
Claysville Donegal Joint Auth., - 560 Homes
Clearfield County Municipal Auth., - 500 Homes
Clintonville Boro Water, - 260 Homes
Cocalico Twp Auth, - 2000 Homes
Cokeburg Borough, - 450 Homes
Conygham Boro Auth, - 850 Homes
Cooper Township, - 1200 Homes
Corsopolis Boro, - 2200 Homes
Cornwall Boro Mun. Auth., - 750 Homes
Countryside Water Assoc., - 119 Homes
Cove Village Water Assn, - 81 Homes
Cranberry Twp Water, - 1500 Homes
Cresson Boro Water, - 860 Homes
Croyle Twp. Auth., - 260 Homes
Dallas Water Co., - 180 Homes
Denver Boro, - 1100 Homes
Dillsburg Boro, - 1100 Homes
Douglassville Water, - 1100 Homes
Dover Boro Water, - 250 Homes
Dry Run Water Assoc., - 75 Homes
Duncannon Boro Water, - 1000 Homes
Duncansville Boro Auth., - 940 Homes
Dunkard Valley Joint Auth., - 500 Homes
E-Town Boro Water, - 2850 Homes
E-Ville Area Auth., - 875 Homes
E-Vine Municipal Auth., - 690 Homes
Eagles Merre Water Co., - 90 Homes
East Berling Boro Water, - 522 Homes
Pennsylvania; East Brady Boro Water, - 535 Homes
East Cameron Twp. Auth., - 52 Homes
East Cocalico Twp Mun Auth, - 2000 Homes
East Dunkard, - 1800 Homes
East Greensville Boro Water, - 1000 Homes
East Petersburg Water Auth., - 1600 Homes
Edgeworth Water Auth, - 2850 Homes
Elbon Homeowners Assn., - 27 Homes
Eldrid Twp Mun Auth, - 130 Homes
Eldrid Water Auth, - 385 Homes
Elizabethtown Boro, - 2850 Homes
Elizabethville Area Auth, - 800 Homes
Elkland Boro Water, - 700 Homes
Ellsworth Borough, - 500 Homes
Emlenton Water Co, - 385 Homes
Ephrata Boro, - 2850 Homes
Ernest Boro, - 200 Homes
Evans City Boro, - 940 Homes
Everett Boro Mun Auth, - 850 Homes
Fairchance Boro, - 525 Homes
Fairfield Mun Auth, - 275 Homes
Fall Creek Boro, - 410 Homes
Fans Creek Borough, - 485 Homes
Fawn Frazer Water Auth, - 1600 Homes
Ferguson Twp Auth, - 450 Homes
Fire Tower Water Assn., - 42 Homes
Fleetwood Boro Water, - 1500 Homes
Ford City Boro, - 1750 Homes
Franklin Water Co, - 85 Homes
Franklintown Water Auth, - 175 Homes
Fredericksburg Mun. Auth., - 250 Homes
Fredonia Boro Water, - 285 Homes
Freeland Mun Auth, - 2400 Homes
Freidens Highland Mutua, - 32 Homes
Galeton Boro Water, - 635 Homes
Galitzin Water Auth, - 1000 Homes
Genneese Township Authority., - 165 Homes
Glenn Hope Water Assn., - 52 Homes
Grampian Penn Twp Auth, - 385 Homes
Gratz Boro Water, - 230 Homes
Green Twp. Water Auth., - 175 Homes
Grove City Boro Water, - 2400 Homes
Guilford Twp Auth, - 2850 Homes
Halifax Area Auth, - 610 Homes
Hamburg Boro Water, - 2200 Homes
Harford Water Assoc., - 40 Homes
Pennsylvania; Harman Twp., - 1700 Homes
Harmony Boro, - 450 Homes
Harrison Twp Auth, - 2850 Homes
Hastings Mun. Auth., - 700 Homes
Hazel Hurst Water Assn, - 80 Homes
Hegins Twp Auth, - 1100 Homes
Herndon Boro Water, - 260 Homes
Highland Twp Auth, - 125 Homes
Holidaysburg Boro Auth, - 2600 Homes
Honeybrook Boro Water, - 470 Homes
Horton Twp. Auth., - 55 Homes
Hughesville Boro Water, - 1100 Homes

Huntington Boro Water, - 2850 Homes
Huston Twp. Auth., - 330 Homes
Hyndman Borough, - 450 Homes
Independance Twp. Auth., - 480 Homes
Indian Lake Water Auth., - 477 Homes
Irvona Water Auth, - 575 Homes
Jackson Twp. Water Auth., - 1300 Homes
Jay Twp. Auth., - 675 Homes
Jefferson Twp. Auth., - 208 Homes
Jenners Twp. Auth., - 295 Homes
Jim Thorpe Boro Water, - 1100 Homes
Johnsonburg Mun Water, - 1300 Homes
Kittanning Boro, - 1200 Homes
Kittanning Duburban Joint Water Auth, - 1500 Homes
Knox Boro Water, - 580 Homes
Knoxville Boro Water, - 235 Homes
Kreamer Mun Auth, - 250 Homes
Lakyville Water Co., - 185 Homes
Lawrenceville Boro Auth., - 265 Homes
Leesburg Water Assn, - 70 Homes
Leesport Mun. Auth., - 1700 Homes
Leporte Borouth, - 185 Homes
Ligonier Boro, - 1000 Homes
Lilly Level Water Auth., - 80 Homes
Littlestown Boro Water, - 1300 Homes
Liverpool Boro Water, - 260 Homes
Loganton Boro Water, - 187 Homes
Lower Mahanoy Area Auth., - 175 Homes
Loyalton Water Assn, - 50 Homes
Lykens Boro Auth, - 1200 Homes
Madisonburg Waterworks, - 100 Homes
Manheim Boro Water, - 2300 Homes
Mansfield Water Auth., - 1000 Homes
Mariana Boro Water, - 237 Homes
Pennsylvania, Marienville Water Supply, - 355 Homes
Mars Boro, - 570 Homes
Martinsburg Boro Auth., - 1200 Homes
Mc Alisterville Joint Auth, - 410 Homes
Mc Clure Mun Auth, - 350 Homes
Mcveytown Boro Auth, - 200 Homes
Menno Water Assn., - 49 Homes
Mercer Water Co, - 1100 Homes
Meshopen Boro Water, - 138 Homes
Middleburg Boro Water, - 860 Homes
Mifflinburg Boro Water, - 1600 Homes
Milesburg Boro Water, - 880 Homes
Milford Twp Auth, - 1000 Homes
Millersburg Area Auth, - 2400 Homes
Millerstown Boro Water, - 270 Homes
Millheim Boro Water, - 365 Homes
Minersville Water Auth, - 1500 Homes
Monument Water Assn., - 50 Homes
Moshannan Water Assn., - 32 Homes
Mount Union Boro Water, - 1700 Homes
Mountain Water Auth., - 150 Homes
Mt Jewett Water Auth, - 410 Homes
Mt Joy Twp Mun Auth, - 410 Homes
Mt. Union Water, - 2000 Homes
Myerstown Water Auth., - 2300 Homes
Nanty-Glo Water Auth, - 1500 Homes
Nelson Twp. Auth., - 100 Homes
New Bloomfield Water Auth, - 380 Homes
New Enterprise Water Assoc, - 200 Homes
New Holland Boro, - 2800 Homes
New Milford Mun Auth, - 450 Homes
New Oxford Mun Auth, - 1200 Homes
Newell Borough Mun. Auth, - 250 Homes
Newport Boro Water, - 920 Homes
Newville Boro Water, - 775 Homes
Nicholson Boro Auth., - 265 Homes
North Warren Water Auth., - 500 Homes
Oakhall Water Assn., - 45 Homes
Oakland Boro Water, - 235 Homes
Oneida Water Co, - 235 Homes
Orbisonia Rockhill M. A., - 389 Homes
Orviston Water Assn., - 57 Homes
Orwigsburg Boro Water, - 1300 Homes
Oxford Boro, - 1200 Homes
Paridise Water Assoc, - 200 Homes
Penn Twp. Water Dist., - 125 Homes
Pennsylvania, Petrolia Water Auth, - 150 Homes
Pillow Water Auth, - 125 Homes
Pine Grove Boro Water, - 2400 Homes
Pocono Jackson Twp Auth, - 50 Homes
Port Allegany Water, - 1100 Homes
Port Matilda Water, - 225 Homes
Port O Call Water Assn, - 160 Homes
Quentin Water Co, - 175 Homes
Raccoon Twp Water, - 970 Homes
Railroad Boro Water, - 125 Homes
Ralston Water Co., - 100 Homes
Rauchtown Water Assn., - 200 Homes
Rebersburg Water, - 160 Homes
Red Bank Valley , - 1200 Homes
Renovo Boro Water, - 700 Homes

Rew Water Assn, - 90 Homes
Richland Boro Water, - 560 Homes
Richlandtown Boro Water, - 350 Homes
Rimersburg Boro Water, - 640 Homes
Ringtown Boro Water, - 365 Homes
Rixford Water Assn, - 100 Homes
Roaring Branch Water Assn., - 25 Homes
Rockingham Water Assn., - 38 Homes
Rockwood Mun Auth, - 450 Homes
Rouseville Boro Water, - 250 Homes
Sandy Lake Mun Auth, - 350 Homes
Sandy Ridge Water Auth., - 185 Homes
Sandy Run Water Assn, - 30 Homes
Satillo Mun. Water, - 150 Homes
Schwenksville Boro Auth, - 1500 Homes
Seven Spring Mun Auth, - 585 Homes
Sewickley Water Auth, - 2300 Homes
Sharpsburg Borough, - 1100 Homes
Sheffield Twp Mun Auth, - 560 Homes
Shippenville Boro Water, - 320 Homes
Shirleyburg Mun. Auth., - 68 Homes
Shoemakerville Boro Water, - 535 Homes
Slatington Boro Mun Auth, - 1500 Homes
Smethport Boro Water, - 800 Homes
Somerset Water Co., - 41 Homes
South Renovo Boro Water, - 320 Homes
South West Warren Co Mun, - 450 Homes
Spangler Mun. Auth., - 1100 Homes
Spring Grove Water Assn., - 30 Homes
Spring Mills Water Assn, - 160 Homes
Springdale Twp., - 980 Homes
Pennsylvania; Stewartstown Mun. Auth., - 875 Homes
Stoneboro Water, - 445 Homes
Stoystown Boro Water Auth., - 170 Homes
Strasburg Boro, - 1200 Homes
Sunset View Water Assn., - 16 Homes
Tarentum Boro, - 1600 Homes
Teakettle Run Water Assn, - 34 Homes
Terre Hill Boro, - 460 Homes
Teynoldsville Mun Auth, - 1200 Homes
Thompsontown Mun Auth, - 415 Homes
Three Springs Water, - 200 Homes
Tioga Mun. Auth., - 260 Homes
Tionesta Boro Water, - 335 Homes
Towanda Boro Water, - 2500 Homes
Tower City Boro Auth, - 1200 Homes
Tri County Joint Auth., - 2800 Homes
Troxelville Water Co., - 85 Homes
Troy Boro Water, - 600 Homes
Tunkhannock Boro Water, - 1000 Homes
Ulysses Mun. Auth., - 225 Homes
Union Twp Auth, - 1000 Homes
Unionville Borough, - 120 Homes
Upper Hanover Twp Auth, - 1000 Homes
Venus Water Association, - 40 Homes
Walker Twp Water Assoc, - 800 Homes
Wallaceton Mun. Auth., - 115 Homes
Warwick Twp Auth, - 2850 Homes
Washington Twp Mun. Auth., - 2850 Homes
Waterville Water Assoc., - 75 Homes
Watrous Water Assn., - 40 Homes
Weatherly Boro Water, - 890 Homes
Wells Tannery Water Assn., - 55 Homes
Wellsboro Boro Water, - 1400 Homes
Wernersville Mun.auth., - 1500 Homes
West Bethel Twp. Auth., - 215 Homes
West Bethlehem Twp, - 215 Homes
West Donngal Twp. Auth., - 600 Homes
West Earl Twp Auth, - 791 Homes
West Grove Boro, - 1800 Homes
West Hills Mun Auth, - 2700 Homes
West Lebanon Twp Water, - 300 Homes
Western Heights Water Auth, - 88 Homes
Westfield Boro Water, - 535 Homes
Westford Water Co., - 140 Homes
Westlebanon Twp. Water, - 300 Homes
Westover Mun. Auth., - 500 Homes
Pennsylvania; White Haven Mun Auth, - 500 Homes
Wilbur Community Water Co., - 60 Homes
Wilcox Water Co, - 245 Homes
Williamsburg Water Dept., - 910 Homes
Williamstown Boro Auth, - 980 Homes
Willowbrook Water Assn, - 169 Homes
Windsor Boro Water, - 550 Homes
Womelsdorf Robisinia Water, - 2000 Homes
Wonderview Water Co, - 130 Homes
Woodbury Water Auth, - 200 Homes
Woodward Water Co, - 72 Homes
York Springs Mun Auth, - 300 Homes
Young Womans Creek Water, - 100 Homes
Youngsville Mun Water, - 800 Homes
Zelienople Boro, - 1800 Homes
Homes
Homes

SouthCarolina, - Aiken, - 4500 Homes
Alcolu, - 200 Homes
Aligator Water Co., - 700 Homes
Andrews, - 1350 Homes
Bamberg, - 1694 Homes
Barnwel, - 5500 Homes
Barrineau, - 325 Homes
Batesburg, - 2000 Homes
Bath Water Co., - 200 Homes
BDST Rural Water, - 7000 Homes
Beaufort Jasper, - 3200 Homes
Belton, - 1500 Homes
Bennettsville, - 3500 Homes
Berkley Cty W & S, - 3600 Homes
Bethum Rural Water, - 714 Homes
Bethune, - 350 Homes
Bishopville, - 1100 Homes
Blackburg, - 800 Homes
Blacksville, - 1025 Homes
Blackville, - 1100 Homes
Blanchville, - 413 Homes
Blue Ribbon, - 550 Homes
Blue Ridge Water Co., - 2000 Homes
Blythewood, - 300 Homes
Bowman, - 500 Homes
Branchville, - 475 Homes
Breezy Hil, - 1450 Homes
Brown Ferry Water Co., - 600 Homes
Brown's Creek Water, - 300 Homes
Bruettown Water Co., - 225 Homes
SouthCarolina, - Bucksport Water Co., - 3400 Homes
Bull Swamp, - 625 Homes
Burnettown Water Co., - 450 Homes
Burrineau Water Dist., - 350 Homes
Camden, - 2400 Homes
Carlisle, - 300 Homes
Cash, - 475 Homes
Cassatt, - 7000 Homes
Catawba Water Co., - 2 Homes
Chalhoun Falls, - 950 Homes
Charlisle, - 200 Homes
Cheraw, - 2500 Homes
Chester, - 5800 Homes
Chesterfield City Water, - 2600 Homes
City Dillion, - 2650 Homes
City Kershaw, - 1200 Homes
City Marion Water Co., - 3600 Homes
City of Aiken, - 12000 Homes
City of Bethune, - 350 Homes
City of Chesterfeild, - 900 Homes
City of Clinton, - 3649 Homes
City of Georgetown, - 10000 Homes
City of Lancaster, - 2100 Homes
City of Lexington, - 4500 Homes
City of Newberry, - 2090 Homes
City of Pickens, - 3300 Homes
City of Union, - 10000 Homes
City of Westminster, - 1800 Homes
City Walhalla, - 4954 Homes
City Winsboro, - 1950 Homes
Clemson, - 3600 Homes
Clinton, - 9000 Homes
Clio, - 460 Homes
College Acres, - 402 Homes
Conway, - 6300 Homes
Cottageville, - 0 Homes
Coward, - 200 Homes
Dalzel, - 350 Homes
Daniel Morgan, - 525 Homes
Darlington, - 1700 Homes
Dazel, - 350 Homes
Denmark, - 1400 Homes
Dillon, - 2500 Homes
Dorchestor Water & Sewer, - 3000 Homes
Eastover, - 500 Homes
Eautenville, - 217 Homes
SouthCarolina, - Edgefield Water & Sewer, - 1800 Homes
Edisto, - 1615 Homes
Ehrhardt, - 285 Homes
Elko, - 122 Homes
Elloree, - 650 Homes
Enorre Mills, - 300 Homes
Erhardt Water Co. Rda Meeting, - 275 Homes
Estil, - 995 Homes
Eutawville, - 250 Homes
Fairfax, - 780 Homes
Florence City Water/Sewer, - 970 Homes
Folly Beach, - 1320 Homes
Futawville, - 200 Homes
Gaffney W/S, - 1200 Homes
Gaston, - 850 Homes
Georgetown Co. Rural Water Dist., - 1850 Homes
Gifford, - 108 Homes
Gilbert, - 300 Homes

Goose Creek, - 4000 Homes
Grandstrand W & S, - 19750 Homes
Graniteville, - 235 Homes
Grassy Pond, - 1400 Homes
Great Falls, - 1100 Homes
Greeleyville, - 200 Homes
Hampton, - 1500 Homes
Hardeeville, - 900 Homes
Harleyville, - 200 Homes
Heath Springs, - 400 Homes
Hemingway, - 900 Homes
Hickory Grove, - 350 Homes
High Hil, - 1650 Homes
Holda, - 125 Homes
Holly Hil, - 763 Homes
Homeland Park, - 2910 Homes
Inman Campobello, - 435 Homes
Inman Mills, - 495 Homes
Isle of Palms, - 3200 Homes
Iva, - 450 Homes
J.B. Stevenson Co., - 1 Homes
Jamestown, - 110 Homes
Jefferson, - 348 Homes
Jenkinsville, - 985 Homes
John's Island, - 2500 Homes
Johnsonville, - 500 Homes
Jonesville, - 700 Homes
Kershaw, - 1450 Homes
SouthCarolina, - Kiawah Islands, - 210 Homes
Kingstree, - 2500 Homes
Knightville Water Co., - 375 Homes
L. C. F. Water Co., - 3000 Homes
Lake City, - 3280 Homes
Lake View, - 475 Homes
Lam , - 470 Homes
Lancaster City Water, - 2100 Homes
Landrum, - 1240 Homes
Lane Water Co., - 200 Homes
Langley, - 200 Homes
Laurens & Rabon Creek, - 6500 Homes
Levey Limehouse, - 490 Homes
Lexington City, - 4500 Homes
Lincolnville, - 222 Homes
Little River, - 1301 Homes
Lockhart Mills, - 200 Homes
Lodge, - 50 Homes
Loris, - 1510 Homes
Lowery Utilities, - 2500 Homes
Lugoff Water & Sewer, - 4500 Homes
Luray, - 25 Homes
Madison, - 300 Homes
Marco, - 2800 Homes
Marion, - 3800 Homes
Marlboro City, - 1000 Homes
Mcbee, - 400 Homes
Mccal, - 950 Homes
Mccormick, - 900 Homes
Meansville Riley Water Co., - 2100 Homes
Mid-Colina Water, - 800 Homes
Mid-County, - 743 Homes
Mitford Rural Water, - 625 Homes
Moncks Corner, - 2200 Homes
Monetta, - 300 Homes
Mont-Couchton, - 1000 Homes
Mt. Pleasant, - 14500 Homes
Mullins, - 1200 Homes
Neeses, - 290 Homes
Netro Spartanburg, - 850 Homes
New Ellington, - 1200 Homes
Newberry City, - 2300 Homes
Nichols, - 200 Homes
Ninety Six, - 1200 Homes
North, - 650 Homes
Northeast Richland Co., - 12000 Homes
SouthCarolina, - Norway, - 625 Homes
Oak Grove Utilities, - 200 Homes
Oak Hil, - 84 Homes
Olanta, - 350 Homes
Ol Water Co., - 225 Homes
Oswago Water Co., - 580 Homes
Pageland, - 1250 Homes
Pamplico, - 1100 Homes
Patrick, - 220 Homes
Pelion, - 525 Homes
Pelzer, - 600 Homes
Pendleton, - 900 Homes
Perry, - 450 Homes
Pickens City Public Service, - 500 Homes
Pinewood, - 400 Homes
Pioneer, - 3300 Homes
Plainview, - 40 Homes
Point South, - 10 Homes
Powdersville Water Co., - 7100 Homes
Prosperity, - 450 Homes
Quimby, - 340 Homes
Rabon Creek Water Dist., - 6808 Homes

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Ravene, - 500 Homes
Rembert, - 95 Homes
Rideville Water Co., - 425 Homes
Ridgeland, - 835 Homes
Ridgeville, - 225 Homes
Ridgeway, - 450 Homes
River View, - 251 Homes
Rural Community Water Georgetown, - 1764 Homes
S.J.W.D., - 10000 Homes
Salem, - 300 Homes
Salley, - 225 Homes
Saluda, - 1400 Homes
Sandy Springs, - 3000 Homes
Santee, - 600 Homes
Santuck Hebron, - 850 Homes
Scotia, - 74 Homes
Scranton, - 350 Homes
Seabrook W/S, - 6050 Homes
Seneca Light Water Co., - 9000 Homes
Sharon, - 300 Homes
Silver Spring Water Co., - 320 Homes
Spartburg Metropolitan, - 950 Homes
Springfield, - 150 Homes
St. George, - 600 Homes
SouthCarolina, - St. John's, - 2000 Homes
St. Matthews, - 1200 Homes
St. Stephens, - 624 Homes
St. Thomas Point H.o.assi, - 16 Homes
Starr, - 2500 Homes
Stateburg-Wedgefeild, - 400 Homes
Sullivan's Island, - 850 Homes
Summerton, - 690 Homes
Summerville, - 3000 Homes
Surfside, - 2500 Homes
Swansea, - 500 Homes
Talatha Water Dist., - 600 Homes
Tillman, - 10 Homes
Timmonsville, - 1000 Homes
Town of Bamburg, - 1375 Homes
Town of Bethune, - 250 Homes
Town of Blackville, - 1149 Homes
Town of Bowman, - 600 Homes
Town of Centra, - 1700 Homes
Town of Cheraw, - 1947 Homes
Town of Denmark, - 1488 Homes
Town of Ehrhardt, - 267 Homes
Town of Elloree, - 539 Homes
Town of Harleyville, - 267 Homes
Town of Lincolnville, - 240 Homes
Town of Loris, - 896 Homes
Town of Lynchburg, - 226 Homes
Town of Mcbee, - 368 Homes
Town of Mccormick, - 976 Homes
Town of Olanta, - 303 Homes
Town of Ridgeville, - 214 Homes
Town of Ridgeway, - 254 Homes
Town of Santee, - 1150 Homes
Town of Springfield, - 430 Homes
Town of St. George, - 901 Homes
Town of Walhalla, - 5117 Homes
Town of Westminster, - 2503 Homes
Town of Winnsboro, - 2699 Homes
Trico, - 3000 Homes
Upper Calhoun, - 550 Homes
Valley Public, - 2200 Homes
Varnville, - 773 Homes
Wagner, - 550 Homes
Walhalla, - 2000 Homes
Wallace Water Co., - 725 Homes
Walterboro, - 1600 Homes
SouthCarolina, - Wedgefield, - 200 Homes
West Pelzer, - 500 Homes
West Union, - 200 Homes
Westminster, - 2800 Homes
Whitmire, - 500 Homes
Williamson, - 1700 Homes
Williston, - 1200 Homes
Winnsboro, - 1950 Homes
Woodruff, - 500 Homes
Woodruff-Roebuck, - 3000 Homes
Yamassee, - 250 Homes
York, - 1500 Homes
Homes
Homes
SouthDakota, - A-b RWS, - 920 Homes
Alcester, - 240 Homes
Arlington, - 260 Homes
Armour, - 245 Homes
Aurora, - 180 Homes
Avon, - 165 Homes
B-Y Water Dist, - 3100 Homes
BDM, - 636 Homes
Belle Fourche, - 1445 Homes
Beresford, - 538 Homes
Big Sioux RWS, - 1410 Homes
Black Hawk Water Co, - 460 Homes

Blucksberg Water, - 150 Homes
Blunt, - 100 Homes
Bonestee, - 85 Homes
Box Elder, - 1062 Homes
Brandon, - 1015 Homes
Brookings Deuel Rws, - 2045 Homes
Bryant, - 110 Homes
Burke, - 220 Homes
Butte Meade, - 488 Homes
Canton, - 800 Homes
Centerville, - 255 Homes
Chamberlain, - 670 Homes
Chris' Campground, - 25 Homes
Clark Rws, - 700 Homes
Clat Rws, - 1215 Homes
Clay Rws, - 1215 Homes
Colman, - 140 Homes
Colome, - 90 Homes
Colonial Pine Hills, - 190 Homes
Crago Water Company, - 48 Homes
SouthDakota, - Dakota Dunes, - 140 Homes
Dallas, - 40 Homes
Davis, - 35 Homes
Davison Rws, - 630 Homes
De Smet, - 335 Homes
Deadwood, - 610 Homes
Doland, - 90 Homes
Edgemont, - 489 Homes
Egan, - 60 Homes
Elk Point, - 410 Homes
Elkton, - 175 Homes
Fairview, - 30 Homes
Fall River Rws, - 0 Homes
Faulkton, - 235 Homes
Flandreau, - 660 Homes
Freeman, - 370 Homes
Ft Pierre, - 530 Homes
Gayville, - 115 Homes
Geddes, - 80 Homes
Grant Roberts Rws, - 1000 Homes
Green Valley, - 85 Homes
Gregory, - 400 Homes
Hanson, - 591 Homes
Harrisburg, - 210 Homes
Harrold, - 50 Homes
Hayti, - 110 Homes
Herrick, - 40 Homes
Hitchcock, - 35 Homes
Howard, - 330 Homes
Huron, - 3333 Homes
Irene, - 135 Homes
Iroquois, - 95 Homes
Isabe, - 110 Homes
Jefferson, - 150 Homes
Kimbal, - 215 Homes
Kingbrook Rws, - 2480 Homes
Lake Andes, - 245 Homes
Lake Madison, - 300 Homes
Lake Preston, - 190 Homes
Lake Vermillion Cp Gr, - 1 Homes
Lakeside Water Users, - 21 Homes
Lead, - 1443 Homes
Lennox, - 505 Homes
Lewis & Clark Rws, - 1 Homes
Lincoln County Rws, - 1023 Homes
Madison, - 1790 Homes
SouthDakota, - Marion, - 240 Homes
Mc Cook Lake, - 345 Homes
Mellette, - 55 Homes
Mid Dakota, - 0 Homes
Midland, - 92 Homes
Milbank, - 1110 Homes
Miller, - 643 Homes
Minnehaha Community Water Corp., - 2362 Homes
Mission Hil, - 55 Homes
Mni Wiconi, - 90 Homes
Montrose, - 120 Homes
Mount Vernon, - 105 Homes
Murray Water, - 92 Homes
Newel, - 212 Homes
Oacoma, - 105 Homes
Parker, - 285 Homes
Parkston, - 450 Homes
Philip, - 362 Homes
Pickstown, - 40 Homes
Piedmont Valley, - 123 Homes
Plankington, - 175 Homes
Platte, - 375 Homes
Pukwana, - 75 Homes
Randall Comm Water Dist, - 1940 Homes
Rapid Valley, - 2150 Homes
Ravinia, - 30 Homes
Redfield, - 795 Homes
Revillo, - 45 Homes
Riv-r-land Estates, - 45 Homes
Roscoe, - 123 Homes

S & T Mobile Hm Park, - 80 Homes
Salem, - 370 Homes
Sinai, - 35 Homes
Sioux Rws, - 945 Homes
So Lincoln Rws, - 1245 Homes
So Spink/Beadle Rws, - 30 Homes
South Lincoln, - 1238 Homes
Spearfish, - 1750 Homes
Springfield, - 240 Homes
Stickney, - 100 Homes
Sturgis, - 1843 Homes
Sw Valley Utility, - 123 Homes
T C & G Water, - 97 Homes
Tabor, - 115 Homes
Tea, - 225 Homes
TM Rwd, - 860 Homes
SouthDakota, - Tripp, - 190 Homes
Tyndal, - 345 Homes
Utica, - 35 Homes
Vale, - 40 Homes
Vermillion, - 2750 Homes
Viborg, - 220 Homes
Volga, - 360 Homes
Volin, - 50 Homes
W.E.B. Wtr Dev Corp, - 5140 Homes
Wagner, - 420 Homes
Wakonda, - 95 Homes
Wal, - 256 Homes
Web Water Dev, - 5139 Homes
Webster, - 580 Homes
Wessington, - 75 Homes
West River Rwa, - 90 Homes
White Lake, - 120 Homes
Whitewood, - 273 Homes
Winner, - 960 Homes
Wispering Pines Wtr Co, - 200 Homes
Wolsey, - 130 Homes
Homes
Homes
Tennessee,- 1st U.D. of Hardin County, - 1500 Homes

1st U.D. of Tipton Co., - 2400 Homes
2nd South Cheatham Utility Dist., - 1750 Homes
Adamsville Water Department, - 2100 Homes
Alamo Water Department, - 1150 Homes
Alexandria Water Department, - 600 Homes
Allardt Water Department, - 730 Homes
Alpha Talbott Utility District, - 4700 Homes
Anderson County Utility Board, - 2500 Homes
Arlington Water Department, - 450 Homes
Arthur-Shawanee Utility District, - 1993 Homes
Ashland City Water Department, - 1300 Homes
Athens Utility Board, - 3000 Homes
Atoka Water Department, - 500 Homes
Atwood Water Department, - 475 Homes
Baneberry Utility District, - 120 Homes
Bangham Utility District, - 1780 Homes
Baxter Water Department, - 1300 Homes
Bean Station Utility District, - 1429 Homes
Bedford County Utility District, - 3800 Homes
Bells Water Department, - 625 Homes
Bethel Springs Utility District, - 388 Homes
Big Creek Utility District, - 2157 Homes
Tennessee,- Big Sandy Water Department, - 315 Homes
Bloomingdale Utility District, - 4670 Homes
Blountville Utility District, - 3500 Homes
Blue Springs Utility District, - 449 Homes
Bluff City Water Department, - 1300 Homes
Bolivar Water Department, - 2500 Homes
Bon Aqua Lyles Utility District, - 1800 Homes
Bondecroft Utility District, - 840 Homes
Bradford Water Department, - 550 Homes
Brighton Water Department, - 500 Homes
Bruceton Water Department, - 700 Homes
Byrdstown Water Department, - 1600 Homes
Calhounch Utility District, - 530 Homes
Camden Water Department, - 3250 Homes
Carderview Utility District, - 190 Homes
Carthage Water Department, - 1000 Homes
Caryville Jacksboro Utility Comm, - 2500 Homes
Castalian Springs-bethpage Utility District, - 1964 Homes
Catoosa Utility District, - 2150 Homes
Cedar Grove Utility District, - 450 Homes
Celina Water Department, - 1350 Homes
Centerville Water Department, - 3500 Homes
Chanute Pall Mall Utility Dist., - 280 Homes
Chinquapin Grove Utility Dist., - 600 Homes
Chuckey Utility District, - 2473 Homes
Claiborne County U.D., - 3500 Homes
Clarksburg Utility District, - 450 Homes
Clearfork Utility District, - 508 Homes
Cleveland Water System, - 15000 Homes
Clifton Water Department, - 400 Homes
Clinton Utilities , - 5400 Homes

Cold Springs Utility District, - 165 Homes
Collinwood Water Department, - 675 Homes
Consolidated Utility District, - 16700 Homes
Cookeville Boat Dock Road U.D., - 1411 Homes
Copper Basin Utility District, - 563 Homes
Copperhill Water Dep tment, - 260 Homes
Cordell Hull Utility District, - 519 Homes
County Wide Utility District, - 3000 Homes
Crab Orchard Utility District, - 4000 Homes
Crockett Mills Utility District, - 307 Homes
Cross Anchor Utility District, - 1931 Homes
Cumberland City Water Department, - 200 Homes
Dandridge Water Department, - 1130 Homes
Dayton Water System, - 5300 Homes
Decaturville Water Department, - 700 Homes
Tennessee, Dekalb Utility District, - 2800 Homes
Dewhite Utility District, - 1570 Homes
Dixie Lee Utility District, - 3000 Homes
Double Springs Utility District, - 1407 Homes
Dover Water Department, - 800 Homes
Dresden Water Department, - 1300 Homes
Dry Run Utility District, - 130 Homes
Dunlap Water System, - 2100 Homes
Dyer Water Department, - 1100 Homes
Dyersburg Sub. Consolidated U.d., - 1400 Homes
East Fork Utility District, - 580 Homes
Eastside Utility District, - 11000 Homes
Eastview Utility District, - 650 Homes
Elizabethton Water Department, - 9800 Homes
Englewood Water System, - 890 Homes
Erin Water Department, - 1400 Homes
Erwin Utilities, - 4100 Homes
Ethridge Utility District, - 548 Homes
Evensville Utility District, - 700 Homes
Fairview Water Department, - 1500 Homes
Fall Creek Falls Utility District, - 980 Homes
Fentress County Utility District, - 2688 Homes
First U.D. of Carter County, - 1920 Homes
First U.D. of Hawkins County, - 5499 Homes
First U.D. of Knox County, - 15060 Homes
First U.D. of Tipton County, - 2400 Homes
Free Hill Utility District, - 119 Homes
Friendship Water Department, - 285 Homes
Friendsville Utility District, - 900 Homes
Gainesboro Water Department, - 550 Homes
Gallaway Water Department, - 300 Homes
Gates Water Department, - 360 Homes
Gibson Conuty Water District, - 2860 Homes
Gleason Water Dep tment, - 600 Homes
Glen Hills Utility District, - 3100 Homes
Grand Junction Water Dep tment, - 320 Homes
Grandview Utility District, - 381 Homes
Graysville Water System, - 900 Homes
Greenfield Water Department, - 975 Homes
Greenville Water Department, - 7900 Homes
H.B. & T.S. Utility District, - 3092 Homes
Halls Water Department, - 2000 Homes
Hallsdale Powell Utility Dist., - 18500 Homes
Hampton Utility District, - 1090 Homes
Harpeth Utility District, - 909 Homes
Harriman Water Department, - 3300 Homes
Tennessee, Henderson Water Department, - 2110 Homes
Henning Water Department, - 364 Homes
Henry Water Department, - 202 Homes
Highway 25 Utility District, - 493 Homes
Hixson Utility District, - 19000 Homes
Hohenwald Water Department, - 2445 Homes
Hollow Rock Water Department, - 300 Homes
Hornbeak Utility District, - 500 Homes
Hornsby Water Department, - 350 Homes
Humboldt Water Department, - 4200 Homes
Huntingdon Water Department, - 1900 Homes
Huntsville Utility District, - 3000 Homes
Hwy. 25 Util. Dist., - 483 Homes
Iron City Utility District, - 225 Homes
Jackson County Utility District, - 1640 Homes
Jamestown Water System, - 1500 Homes
Jefferson City Water Department, - 2400 Homes
Jellico Water Department, - 1400 Homes
Johnson City Water Department, - 26000 Homes
Kenton Water Department, - 602 Homes
Kentucky Lake Heights U.D., - 150 Homes
Kingston Water Dep tment, - 2800 Homes
Knox Chapman Utility District, - 8179 Homes
KY Lake Heights Utility District, - 150 Homes
Lafollette Water Department, - 6500 Homes
Lagrange Water Department, - 85 Homes
Lake City Water Department, - 1000 Homes
Lakewood Water Works, - 850 Homes
Lauderdale County Water System, - 3391 Homes
Lavergne Water Department, - 2800 Homes
Lawrenceburg Water System, - Homes
Lenoir City Water Department, - 3800 Homes
Lexington Water Department, - 6000 Homes
Linden Water Department, - 1008 Homes

Lobelville Water Department, - 509 Homes
Loudon Utility District, - 5000 Homes
Luttrell Blaine Corryton U.d., - 1520 Homes
Madison Suburban Utility Dist., - 16000 Homes
Madisonville Water Dep tment, - 1910 Homes
Mallory Valley Utility District, - 1400 Homes
Martel Utility District, - 890 Homes
Martin Water Department, - 3600 Homes
Maryville Water Department, - 8600 Homes
Mason Hall Water Department, - 80 Homes
Mason Hall Water System, - 80 Homes
Maury City Water Department, - 400 Homes
Tennessee, - Maynardsville Utility District, - 1278 Homes
Mcewen Water Department, - 780 Homes
Mckenzie Water Department, - 2000 Homes
Mclemoresville Water Department, - 170 Homes
Medina Water Department, - 300 Homes
Mercer Utility District, - 70 Homes
Michie Water Dep tment, - 760 Homes
Midtown Utility District, - 1380 Homes
Milan Water Department, - 3900 Homes
Milcrofton Utility District, - 2000 Homes
Monteagle Water Department, - 790 Homes
Monterey Water Department, - 1500 Homes
Mooresburg Utility District, - 265 Homes
Morristown Water System, - 9600 Homes
Moscow Water Department, - 200 Homes
Mosheim Water Department, - 540 Homes
Mountain City Water Department, - 3300 Homes
Mt. Pleasant Water Department, - 2200 Homes
Munford Water Department, - 1700 Homes
N. Anderson County Utility Dist., - 3700 Homes
N.E. Henry County Utility Dist., - 1127 Homes
N.W. Dyersburg Utility District, - 1080 Homes
N.W. Henry County Utility Dist., - 520 Homes
New Canton Utility District, - 200 Homes
New Johnsonville Water Dept., - 700 Homes
New Market Utility District, - 1250 Homes
Newbern Water Department, - 2587 Homes
Niota Water Department, - 700 Homes
Norris Water Commission, - 710 Homes
North Anderson Utility District, - 3600 Homes
North Green Utility District, - 1317 Homes
North Stewart Utility District, - 1100 Homes
North Utility District of Rhea County, - 0 Homes
Northeast Knox Utility District, - 4800 Homes
Northwest Clay Utility District, - 967 Homes
O'Connor Utility District, - 1900 Homes
Oak Ridge Water Dept., - 12000 Homes
Oakland Water Department, - 760 Homes
Obion Water Department, - 750 Homes
Ocoee Utility District, - 2866 Homes
Old Gainesboro Road Utility Dist, - 1418 Homes
Old Hickory Utility District, - 1430 Homes
Old Knoxville Highway Util. Dist, - 2000 Homes
Oliver Springs Utility District, - 2003 Homes
Oneida Water Dep tment, - 3157 Homes
Orme Water System, - 32 Homes
Tennessee, - Paris Water Department, - 4700 Homes
Parsons Water Department, - 1400 Homes
Perryville Utility District, - 560 Homes
Persia Utility District, - 1100 Homes
Pigeon Forge Water Dept., - 2300 Homes
Piney Utility District, - 1100 Homes
Pinson Utility District, - 500 Homes
Plateau Utility District, - 1500 Homes
Pleasant Hill Utility District, - 980 Homes
Poplar Grove Utility District, - 3300 Homes
Portland Water System, - 3281 Homes
Proctor City Utility District, - 128 Homes
Puryear Water Department, - 350 Homes
Quebeck Walling Utility District, - 1116 Homes
Ramer Water Department, - 210 Homes
Reelfoot Utility District, - 250 Homes
Ridgely Water Department, - 867 Homes
River Road Utility District, - 425 Homes
Roan Mountain Utility District, - 315 Homes
Rockwood Water Department, - 3100 Homes
Rogersville Water Department, - 2500 Homes
Rossville Water Department, - 140 Homes
Russellville Whitesburg U.D., - 4350 Homes
Rutherford Water Department, - 600 Homes
Rutledge Water Department, - 460 Homes
S. Elizabethton Utility District, - 1800 Homes
S. Morristown-Witt Utility Dist., - 870 Homes
Sale Creek Utility District, - 600 Homes
Saltillo Utility District, - 550 Homes
Samburg Utility District, - 290 Homes
Sanannah Water Department, - 5400 Homes
Saulsbury Utility District, - 189 Homes
Scotts Hill Water Dep tment, - 1000 Homes
Second South Cheatham U.D., - 1750 Homes
Selmer Water Department, - 5000 Homes
Sevierville Water Department, - 4500 Homes
Sewanee Utility District, - 886 Homes

Shady Grove Utility District, - 2879 Homes
Sharon Water Department, - 600 Homes
Siam Utility District, - 822 Homes
Smith Utility District, - 1850 Homes
Smithville Water Department, - 1900 Homes
Smyrna Water System, - 5477 Homes
Sneedville Utility District, - 700 Homes
Soddy Daisy Falling Water U.D., - 3700 Homes
Somerville Water Department, - 1000 Homes
Tennessee,- South Blount Utility District, - 8000 Homes
South Elizabethton U.D., - 1800 Homes
South Fulton Water Dep tment, - 1700 Homes
South Giles Utility District, - 980 Homes
South Morristown Witt Util. Dist, - 870 Homes
South Paris Water Coop, - 600 Homes
Spring City Water Department, - 1020 Homes
Spring Creek Utility District, - 750 Homes
St. Joseph Water Department, - 450 Homes
Stanton Water Department, - 277 Homes
Suck Creek Utility District, - 140 Homes
Summer City Utility District, - 460 Homes
Summertown Utility District, - 593 Homes
Sunbright Utility District, - 1030 Homes
Surgoinsville Utility District, - 624 Homes
Sweetwater Water Department, - 3049 Homes
Sylvia Tn City, Pond U.D., - 1033 Homes
Tellico Plains Water Department, - 1450 Homes
Tennessee Ridge Water Department, - 850 Homes
Tiptonville Water Department, - 840 Homes
Tn Ridge Water Department, - 850 Homes
Tracy City Water Department, - 1130 Homes
Trenton Water Department, - 1900 Homes
Trezevant Water Department, - 436 Homes
Trimble Water Department, - 300 Homes
Troy Water Department, - 800 Homes
Tuckaleechee Utility District, - 2173 Homes
Turnbull Utility District, - 2200 Homes
Unicoi Water Utility District, - 1200 Homes
Union City Water Department, - 5800 Homes
Union Fork-Bakewell Utility District, - 935 Homes
Vanleer Water Department, - 650 Homes
Waldens Ridge Utility District, - 3000 Homes
W ren County Utility District, - 5500 Homes
Watts Bar Utility District, - 1300 Homes
Waverly Water Department, - 2200 Homes
Waynesboro Water Department, - 1200 Homes
Webb Creek Utility District, - 350 Homes
West Piney Utility District, - 350 Homes
West Point Utility District, - 114 Homes
West Putnam Utility District, - 200 Homes
West Valley Water Department, - 700 Homes
West Warren-Viola Utility Dist., - 2023 Homes
Westmoreland Water System, - 904 Homes
White Bluff Utility District, - 1456 Homes
White House Utility District, - 16700 Homes
Tennessee,- White Pine Water Department, - 860 Homes
Whitebluff Utility District, - 1456 Homes
Whiteville Water Department, - 500 Homes
Wolfe Branch Utility District, - 771 Homes
Woodbury Water Dep tment, - 2100 Homes
Woodlawn Utility District, - 2000 Homes

Texas, - 410 WSC, - 650 Homes
5-Way WSC, - 390 Homes
A&P WSC, - 170 Homes
Ables Springs WSC, - 715 Homes
Afton Grove WSC, - 349 Homes
Alleyton WSC, - 58 Homes
Alto Rural WSC, - 1120 Homes
Anderson Co. Cedar Creek Wsc, - 287 Homes
Angelina WSC, - 998 Homes
Angus WSC, - 232 Homes
Appleby WSC, - 1000 Homes
Applesprings WSC, - 139 Homes
Aqua WSC, - 9200 Homes
Argyle WSC, - 1180 Homes
Ariam Cancord WSC, - 288 Homes
Armstrong, - 565 Homes
Arroyo , - 512 Homes
Atascosa Rural Wsc, - 1705 Homes
Austin Co. Wsc, - 315 Homes
Axtell WSC, - 432 Homes
B C Y WSC, - 550 Homes
Baffin Bay WSC , - 278 Homes
Bandera Co., - 425 Homes
Barkadale WSC, - 64 Homes
Barton Creek WSC, - 198 Homes
Bartonville WSC, - 1474 Homes
Bastrop Co. Wcid #1, - 185 Homes
Batesville WSC, - 350 Homes
Bell Milam Falls WSC, - 1320 Homes
Ben Wheeler WSC, - 509 Homes
Benton City WSC, - 550 Homes
Bethal-Ash WSC, - 984 Homes

Bethany WSC, - 861 Homes
Bethel Ash WSC, - 1114 Homes
Betheny-Hearne WSC, - 131 Homes
Bethesda WSC, - 6300 Homes
Bevil Oaks M U D, - 520 Homes
Bex Co. WCID #16, - 1650 Homes
Texas, - Bi-County WSC, - 2500 Homes
Bi-Sstone MWSD, - 200 Homes
Bistone MWD, - 145 Homes
Bitter Creek WSC, - 996 Homes
Blair WSC, - 227 Homes
Blandlake WSC, - 132 Homes
Bold Springs WSC, - 500 Homes
Bolivar Peninsula WSC, - 4790 Homes
Bright St-Salem WSC, - 1170 Homes
Brookesmith SUD, - 2310 Homes
Brookshire M W D, - 955 Homes
Brown Co. Wid #1, - 5 Homes
Bruceville - Eddy WSC, - 1188 Homes
Brushy Creek WSC, - 963 Homes
Buelah WSC, - 240 Homes
Buena Vista WSC, - 191 Homes
Burke WSC, - 970 Homes
Burkeville WSC, - 320 Homes
Caddo Basin Sud, - 1790 Homes
Caddo Lake WSC, - 388 Homes
Calhoun Co. WSC, - 1430 Homes
Cameron Co. FWSD, - 3000 Homes
Caney Creek Haven WSC, - 90 Homes
Canyon Lake WSC, - 3500 Homes
Cape Carancahua WSC, - 256 Homes
Carlos WSC, - 686 Homes
Cash WSC, - 3500 Homes
Cayuga WSC, - 77 Homes
Centerville WSC, - 320 Homes
Central Heights WSC, - 430 Homes
Central Texas WSC, - 16000 Homes
Central Washington Co. WSC, - 375 Homes
Central WCID, - 1824 Homes
Chalk Bluff WSC, - 751 Homes
Chalk Hill WSC, - 755 Homes
Chatfield WSC, - 1062 Homes
Chisholm Trail Sud, - 1600 Homes
City Carrizo Springs, - 2000 Homes
City of Alba, - 290 Homes
City of Alpine, - 2500 Homes
City of Alvord, - 425 Homes
City of Annona, - 161 Homes
City of Anthony, - 647 Homes
City of Arp, - 750 Homes
City of Atlanta, - 2100 Homes
City of Aubrey, - 485 Homes
Texas, - City of Avery, - 175 Homes
City of Avinger, - 225 Homes
City of Balmorhea, - 196 Homes
City of Bandera, - 778 Homes
City of Bangs, - 820 Homes
City of Beckville, - 360 Homes
City of Bellevue, - 151 Homes
City of Berryville, - 450 Homes
City of Bishop, - 1310 Homes
City of Blanco, - 725 Homes
City of Bogota, - 675 Homes
City of Brackettville, - 725 Homes
City of Brazoria, - 1000 Homes
City of Bridgeport, - 1562 Homes
City of Brownsboro, - 495 Homes
City of Bullard, - 470 Homes
City of Byers, - 295 Homes
City of Caldwel, - 1650 Homes
City of Campwood, - 400 Homes
City of Carthage, - 36 Homes
City of Castroville, - 922 Homes
City of Celeste, - 320 Homes
City of Celina, - 750 Homes
City of Center, - 2010 Homes
City of Centerville, - 420 Homes
City of Chandler, - 681 Homes
City of Chico, - 420 Homes
City of China, - 540 Homes
City of Clarksville, - 1775 Homes
City of Cleburne, - 7350 Homes
City of Colmesnei, - 440 Homes
City of Corrigan, - 650 Homes
City of Crystal City, - 2100 Homes
City of Cuney, - 71 Homes
City of Cut-n-shoot, - 353 Homes
City of Danbury, - 490 Homes
City of Dekalb, - 660 Homes
City of Del City, - 195 Homes
City of Deport, - 295 Homes
City of Detroit, - 350 Homes
City of Devine, - 1280 Homes
City of Dibol, - 2180 Homes
City of Dickens, - 215 Homes
City of Dimmitt, - 1400 Homes

City of Domino, - 80 Homes
City of Dorchester, - 435 Homes
Texas, - City of Earth, - 502 Homes
City of Eden, - 630 Homes
City of Eldorado, - 889 Homes
City of Elgin, - 1878 Homes
City of Emory, - 600 Homes
City of Eustace, - 320 Homes
City of Evant, - 229 Homes
City of Fairview, - 675 Homes
City of Farmersville, - 1200 Homes
City of Flatonia, - 910 Homes
City of Floydada, - 1523 Homes
City of Franklin, - 650 Homes
City of Frankston, - 370 Homes
City of Ft. Stockton, - 2900 Homes
City of Giddings, - 2370 Homes
City of Gilmer, - 2200 Homes
City of Goldwaithe, - 840 Homes
City of Goliad, - 900 Homes
City of Gonzales, - 2061 Homes
City of Goodrich, - 220 Homes
City of Gordon, - 150 Homes
City of Grand Saline, - 1240 Homes
City of Gregory, - 640 Homes
City of Groveton, - 515 Homes
City of Gunter, - 267 Homes
City of Hallettsville, - 1400 Homes
City of Hamilton, - 900 Homes
City of Hart, - 435 Homes
City of Hawkins, - 633 Homes
City of Hays / Council Mtg., - 84 Homes
City of Hearne, - 2100 Homes
City of Hemphil, - 610 Homes
City of Hitchcock, - 2000 Homes
City of Hondo, - 2295 Homes
City of Howe, - 770 Homes
City of Hughes Springs, - 1057 Homes
City of Huntington, - 960 Homes
City of Hutchins, - 801 Homes
City of Huxley, - 640 Homes
City of Idalou, - 775 Homes
City of Irsan, - 749 Homes
City of Italy, - 486 Homes
City of Jefferson, - 1157 Homes
City of Joaquin, - 510 Homes
City of Johnson City, - 550 Homes
City of Jones Creek, - 338 Homes
Texas, - City of Junction, - 810 Homes
City of Kennard, - 190 Homes
City of Kosse, - 465 Homes
City of Kountze, - 820 Homes
City of La Grange, - 2300 Homes
City of La Joya, - 1000 Homes
City of Lajoya, - 1000 Homes
City of Lampasas, - 2807 Homes
City of Leakey, - 300 Homes
City of Lexington, - 480 Homes
City of Liverpoo, - 100 Homes
City of Lockney, - 850 Homes
City of Lone Oak, - 280 Homes
City of Lone St, - 535 Homes
City of Lorenzo, - 498 Homes
City of Los Fresnos, - 950 Homes
City of Lott, - 372 Homes
City of Lovelady, - 350 Homes
City of Lucas, - 1002 Homes
City of Luling, - 2003 Homes
City of Mabank, - 1700 Homes
City of Madisonville, - 1720 Homes
City of Magnolia, - 450 Homes
City of Malacoff, - 860 Homes
City of Manor, - 458 Homes
City of Marfa, - 1200 Homes
City of Marquez, - 164 Homes
City of Maud, - 355 Homes
City of Mccamey, - 1120 Homes
City of Mertzon, - 250 Homes
City of Mexia, - 2400 Homes
City of Montgomery, - 246 Homes
City of Moody, - 550 Homes
City of Morgan, - 185 Homes
City of Moulton, - 460 Homes
City of Naples, - 700 Homes
City of Natalia, - 390 Homes
City of Navasota, - 2300 Homes
City of Nazereth, - 130 Homes
City of New London, - 717 Homes
City of New Waverly, - 390 Homes
City of Normangee, - 380 Homes
City of Oakwood, - 285 Homes
City of Olton, - 859 Homes
City of Omaha, - 400 Homes
City of Ore City, - 400 Homes
Texas, - City of Paint Rock, - 140 Homes
City of Petrolia, - 360 Homes

City of Pilot Point, - 1100 Homes
City of Pineland, - 420 Homes
City of Point, - 480 Homes
City of Point Comfort, - 510 Homes
City of Presidio, - 1099 Homes
City of Ralls, - 950 Homes
City of Rankin, - 430 Homes
City of Refugio, - 1810 Homes
City of Reise, - 376 Homes
City of Reno, - 728 Homes
City of Rio Hondo, - 580 Homes
City of Rockdale, - 2250 Homes
City of Rocksprings, - 530 Homes
City of Roma, - 3100 Homes
City of Rosebud, - 495 Homes
City of Royse City, - 800 Homes
City of Sabina, - 780 Homes
City of Saint Jo, - 485 Homes
City of San Augustine, - 1150 Homes
City of Sanger, - 1284 Homes
City of Santa Anna, - 549 Homes
City of Santa Rosa, - 600 Homes
City of Schulenburg, - 1200 Homes
City of Seadrift, - 648 Homes
City of Shepherd, - 860 Homes
City of Shiner, - 780 Homes
City of Sinton, - 1990 Homes
City of Snook, - 283 Homes
City of Somerville, - 690 Homes
City of Sour Lake, - 570 Homes
City of Taft, - 1500 Homes
City of Tatum, - 552 Homes
City of Thornton, - 255 Homes
City of Thral, - 232 Homes
City of Timpson, - 570 Homes
City of Tom Bean, - 425 Homes
City of Toyah, - 64 Homes
City of Trinity, - 1740 Homes
City of Troup, - 850 Homes
City of Troy, - 550 Homes
City of Valentine, - 68 Homes
City of Van Horn, - 950 Homes
City of Waskom, - 875 Homes
City of Weimer, - 1050 Homes
Texas, - City of West, - 1200 Homes
City of West Columbia, - 1550 Homes
City of White Oak, - 1720 Homes
City of Whitesboro, - 1600 Homes
City of Winona, - 220 Homes
City of Woodville, - 1250 Homes
City of Yoakum, - 2520 Homes
City of Gordon, - 280 Homes
City of Newark, - 250 Homes
City of Whitehouse, - 1650 Homes
Coleman Co. WSC, - 1245 Homes
College Mound WSC, - 2100 Homes
Colorado City, - 2000 Homes
Comal Co. Fwsd #1, - 225 Homes
Consolidated WSC, - 4278 Homes
Copeville WSC, - 774 Homes
Corbet WSC, - 590 Homes
Cottonwood WSC, - 182 Homes
Cowboy Country Club, - 23 Homes
Craft Turney WSC, - 1260 Homes
Creedmore-Maha WSC, - 1400 Homes
Crescent Heights WSC, - 515 Homes
Crockett Co. Wcid #1, - 1520 Homes
Cross Roads WSC, - 42 Homes
Culleoka WSC, - 1400 Homes
D & P WSC, - 656 Homes
Damascus Striker WSC, - 350 Homes
Dean Dale WSC, - 950 Homes
Denning W.S.C., - 192 Homes
Dhisholm Trail , - 1450 Homes
Diana WSC, - 1331 Homes
Dobbins-Plantersville WSC, - 634 Homes
Dodge-Oakhurst WSC, - 401 Homes
Dog Ridge WSC, - 1252 Homes
Dogwood Springs WSC, - 135 Homes
Dorchester WSC, - 435 Homes
Dougherty Mwa, - 42 Homes
DPR WSC, - 228 Homes
Duck Creek WSC, - 495 Homes
E. Cedar Creek , - 5000 Homes
East Bell WSC, - 861 Homes
East Medina WSC, - 1523 Homes
East Newton WSC, - 139 Homes
East Rio Hondo, - 3353 Homes
Eastrio Hondo WSC, - 3353 Homes
Ebba Iron Water Plant, - 1 Homes
Texas, - Ebenezer WSC, - 230 Homes
Edom WSC, - 398 Homes
El Indio WSC, - 1000 Homes
El Paso Co. Wid #1, - 2000 Homes
El Paso Wcid Westway, - 644 Homes
El Tanque WSC, - 289 Homes

Elderville WSC, - 2220 Homes
Ellinger Water, - 130 Homes
Elmo WSC, - 608 Homes
EMC WSC, - 300 Homes
Esperanza Fwsd #1, - 100 Homes
Estates Utilities WSC, - 84 Homes
Etoile WSC, - 564 Homes
Eula WSC, - 472 Homes
Fairview Smetana WSC, - 362 Homes
Falcon Rural WSC, - 850 Homes
Fayette WSC, - 1100 Homes
Files Valley WSC, - 641 Homes
Five Way WSC, - 461 Homes
Flat Fork WSC, - 210 Homes
Flo-Community WSC, - 1011 Homes
Fort Clark MUD, - 724 Homes
Fort Gates WSC, - 695 Homes
Fouke WSC, - 1200 Homes
Four Pines WSC, - 638 Homes
Four Way WSC, - 1220 Homes
Franklin Co. Water Dist., - 4 Homes
Frankston Rural WSC, - 312 Homes
Fruitvale WSC, - 856 Homes
Ft. Belknap WSC, - 1000 Homes
Ft. Davis WSC, - 397 Homes
Ft. Gates WSC, - 682 Homes
Ft. Hancock Wcid, - 217 Homes
G & W WSC, - 611 Homes
G M WSC, - 2554 Homes
Galveston Co. WCID #1, - 813 Homes
Galveston Co. WCID #29, - 31 Homes
Galveston Co. WCID #19, - 215 Homes
Galveston Co. WCID #8, - 1150 Homes
Gholson WSC, - 745 Homes
Gill WSC, - 750 Homes
Glendale WSC, - 288 Homes
Glidden F W S D, - 157 Homes
Goforth WSC, - 1430 Homes
Golden WSC, - 924 Homes
Gonzales Co. WSC, - 1100 Homes
Texas, - Green Springs WSC, - 194 Homes
Grimes Co. MUD #1, - 4 Homes
Gum Springs WSC, - 1946 Homes
Gunter WSC, - 845 Homes
Halfway WSC, - 50 Homes
Hamby WSC, - 582 Homes
Hardin WSC, - 1114 Homes
Hermleigh, - 148 Homes
Hickory Creek WSC, - 790 Homes
High Point WSC, - 757 Homes
Hill Country WSC, - 301 Homes
Hilltop WSC, - 245 Homes
Hollands Quarters, - 350 Homes
Homestead M U D, - 822 Homes
Huber WSC, - 127 Homes
Hudson WSC, - 2045 Homes
Hudspeth Co. Wcid #1, - 288 Homes
Hunters Cove WSC, - 28 Homes
Iron Hill WSC, - 119 Homes
Jackson WSC, - 895 Homes
Jarrell - Schwertner WSC, - 943 Homes
Jefferson Co. Wcid #10, - 1400 Homes
Johnson Co WSC, - 7100 Homes
Jonah SUD, - 1700 Homes
Jones WSC, - 1200 Homes
Jonestown WSC, - 900 Homes
Karnack Water Corp., - 215 Homes
Keenan WSC, - 212 Homes
Kellyville-berea WSC, - 248 Homes
Kempner WSC, - 2514 Homes
Kennedy Ridge WSC, - 58 Homes
Kentuckytown WSC, - 647 Homes
Kingsland WSC, - 1300 Homes
Knippa WSC, - 210 Homes
La Joya WSC, - 7000 Homes
Lake Bonanza WSC, - 315 Homes
Lake Kiowa WSC, - 895 Homes
Lake Palo Pinto Area WSC, - 359 Homes
Lakeside Village WSD, - 180 Homes
Lamar Co. WSC, - 5000 Homes
Langtry WSC, - 23 Homes
Lavon WSC, - 525 Homes
Lawrence WSC, - 171 Homes
Leagueville WSC, - 431 Homes
Lebanon WSC, - 167 Homes
Lee Co. WSC, - 2300 Homes
Texas, - Leigh WSC, - 1200 Homes
Leroy-Tours-Gerald WSC, - 400 Homes
Levi WSC, - 390 Homes
Liberty City WSC, - 1231 Homes
Lilly Grove WSC, - 621 Homes
Lincoln WSC, - 184 Homes
Lindale Rural Water, - 1420 Homes
Little Elm Valley WSC, - 485 Homes
Live Oak Bend WSC, - 112 Homes
Lometa WSC, - 395 Homes

Lorraine, City of, - 300 Homes
Lower Robertson Co. WSC, - 400 Homes
Lppa-WSC, - 326 Homes
Lyons WSC, - 220 Homes
M & M WSC, - 796 Homes
M-S WWC, - 192 Homes
Mac Bee WSC, - 155 Homes
Madera Valley WSC, - 648 Homes
Madison Co. WSC, - 230 Homes
Marathon Ws & Ww Sc, - 300 Homes
Marlow WSC, - 290 Homes
Matagorda Co. #5, - 340 Homes
Matagorda Co. #6, - 390 Homes
Mauriceville WSC, - 1649 Homes
May WSC, - 112 Homes
Maydale WSC, - 220 Homes
Mcclellen WSC, - 410 Homes
Mccoy WSC, - 968 Homes
Mcmahan WSC, - 231 Homes
Meadowwood Acres WSC, - 197 Homes
Medina WSC, - 169 Homes
Mercy WSC, - 406 Homes
Milano WSC, - 836 Homes
Military Hwy WSC, - 5800 Homes
Millersview Doole WSC, - 1400 Homes
Milligan WSC, - 700 Homes
Mims WSC, - 344 Homes
Montalba WSC, - 164 Homes
Moore Station WSC, - 540 Homes
Mooreville WSC, - 48 Homes
Morton Valley WSC, - 210 Homes
Mountain Springs WSC, - 442 Homes
Mt. Peak WSC, - 1200 Homes
Mt. Zion WSC, - 550 Homes
Multi-county WSC, - 747 Homes
Mustang WSC, - 730 Homes
Texas, - N E Tex. Mun. Water Dist., - 4 Homes
N. Franklin Co. WSC, - 475 Homes
N. Hopkins County WSC, - 1600 Homes
N. Hunt WSC, - 700 Homes
N. Kaufman WSC, - 400 Homes
N. San Saba WSC, - 235 Homes
N.E. Texas, - 4 Homes
Navarro Mills WSC, - 854 Homes
Neches WSC, - 547 Homes
New Hope WSC, - 608 Homes
New Ulm WSC, - 130 Homes
Newsome WSC, - 123 Homes
Nocona Hills WSC, - 235 Homes
North Alamo WSC, - 15050 Homes
North Cherokee WSC, - 875 Homes
North Hardin WSC, - 1250 Homes
North Kaufman WSC, - 400 Homes
North Milam WSC, - 245 Homes
North Park , - 79 Homes
North Zulch, - 300 Homes
Northeast Washington Co. WSC, - 895 Homes
Northshore WSC, - 550 Homes
Norwood WSC, - 290 Homes
Nueces WSC, - 260 Homes
Oak Manor , - 138 Homes
Oakridge Water Company, - 6500 Homes
Oenaville-Belfals WSC, - 154 Homes
Olden WSC, - 250 Homes
Olmito , - 950 Homes
Paige WSC, - 105 Homes
Parker WSC, - 672 Homes
Pattonville WSC, - 140 Homes
Paxton WSC, - 348 Homes
Pecos Co. WCID #1, - 639 Homes
Pendleton WSC, - 653 Homes
Perry WSC, - 164 Homes
Phelps WSC, - 497 Homes
Pine Prairie WSC, - 1835 Homes
Pleasant Grove WSC, - 357 Homes
Poetry WSC, - 700 Homes
Point Enterprise WSC, - 548 Homes
Pollok-Redtown WSC, - 362 Homes
Polonia WSC, - 1210 Homes
Port O'Conner, - 610 Homes
Porter WSC, - 2510 Homes
Post Oak WSC, - 477 Homes
Texas, - Potosi WSC, - 950 Homes
Prairie Hill WSC, - 477 Homes
Pruitt-Sandflat WSC, - 330 Homes
Pure WSC, - 192 Homes
Quail Creek Mud, - 295 Homes
R.C.H. WSC, - 1050 Homes
R.P.M.-WSC, - 496 Homes
Ramey WSC, - 851 Homes
Ratcliff WSC, - 118 Homes
Red River WSC, - 1460 Homes
Redford WSC, - 20 Homes
Redwater WSC, - 700 Homes
Reklaw WSC, - 178 Homes
Ric do WSC, - 780 Homes

Rice WSC, - 1605 Homes
Richland , - 590 Homes
Rincon WSC, - 640 Homes
Rio WSC, - 546 Homes
River Acres WSC, - 697 Homes
Riverside WSC, - 1239 Homes
Robertson County WSC, - 652 Homes
Rock Hill WSC, - 224 Homes
Rock Island WSC, - 115 Homes
Rockett Sud, - 6604 Homes
Rosco, City of, - 500 Homes
Rose Hill WSC, - 850 Homes
Ross WSC, - 612 Homes
Rural WSC, - 366 Homes
Rusk Rural WSC, - 923 Homes
S Tawakoni WSC, - 1052 Homes
S U N WSC, - 904 Homes
S. Franklin Co. WSC, - 2321 Homes
S. Freestone Co. WSC, - 882 Homes
S. Rains WSC, - 725 Homes
S. Tawakoni WSC, - 1052 Homes
S.W. Milam WSC, - 1853 Homes
Salado WSC, - 1050 Homes
Salem Elm Ridge WSC, - 274 Homes
San Augustine Rural WSC, - 460 Homes
San Jacinto WSC, - 778 Homes
Sand Flat-WSC, - 256 Homes
Santo WSC, - 540 Homes
Sardis Lone Elm WSC, - 1800 Homes
Sebastian , - 472 Homes
Seis Lagos Mud, - 198 Homes
Seth Ward WSC, - 350 Homes
Texas, - Sharon WSC, - 1700 Homes
Sheffield WSC, - 145 Homes
Shelbyville WSC, - 350 Homes
Shiloh WSC, - 115 Homes
Siestashores Wcid, - 440 Homes
Slocum WSC, - 585 Homes
So. Ellis Co. WSC, - 286 Homes
So. Freestone Co. WSC, - 891 Homes
Soda WSC, - 460 Homes
South Cleveland WSC, - 261 Homes
South Rains WSC, - 720 Homes
South Rusk Co. WSC, - 430 Homes
Southeast WSC, - 424 Homes
Southwest Milam WSC, - 1820 Homes
Spade WSC, - 64 Homes
Springs Hill WSC, - 3508 Homes
Starr Co. Wcid #2, - 3590 Homes
Steamboat Mt. WSC, - 539 Homes
Stephens County WSC, - 800 Homes
Sunko WSC, - 900 Homes
Sunnydale WSC, - 52 Homes
Swift WSC, - 650 Homes
Tamina WSC, - 78 Homes
Tarkington WSC, - 569 Homes
Taylors Valley WSC, - 362 Homes
Tempe WSC, - 437 Homes
Tennessee Colony WSC, - 114 Homes
Terlingua WSC, - 200 Homes
Terrell Co. Wc&id #1, - 575 Homes
Timpson Rural WSC, - 541 Homes
Tornillo WSC, - 292 Homes
Town of Broaddus, - 172 Homes
Town of Buffalo Gap, - 210 Homes
Town of Cuney, - 75 Homes
Town of Cut and Shoot, - 350 Homes
Town of Kirvin, - 143 Homes
Town of Woodsboro, - 710 Homes
Travis Co. , - 982 Homes
Trelingua WSC, - 200 Homes
Tri WSC, - 3164 Homes
Tri-county WSC, - 1282 Homes
Trinity Rural WSC, - 1072 Homes
Tunis WSC, - 238 Homes
Two Way WSC, - 756 Homes
Union Grove WSC, - 665 Homes
Union Hill WSC, - 131 Homes
Texas, - Union WSC, - 1300 Homes
Upper Jasper Water Authority, - 695 Homes
Utopia WSC, - 166 Homes
Val Verde , - 150 Homes
Valley WSC, - 90 Homes
Victoria Co. #1, - 660 Homes
Victoria Co. #2, - 185 Homes
Village of Oyster Creek, - 452 Homes
Violet WSC , - 407 Homes
Virginia Hill , - 916 Homes
Wadsworth WSC, - 120 Homes
Walnut Creek , - 1885 Homes
Walnut Grove WSC, - 1540 Homes
Walston Springs WSC, - 1120 Homes
Warren WSC, - 429 Homes
Wellborn WSC, - 1900 Homes
West Bell Co WSC, - 1302 Homes
West Brazos WSC, - 416 Homes

West End WSC, - 554 Homes
West Jacksonville WSC, - 241 Homes
West Wise WSC, - 979 Homes
Western Cass WSC, - 237 Homes
Weston WSC, - 157 Homes
White Rock WSC, - 663 Homes
Wichita Valley WSC, - 1785 Homes
Wickson Creek Sud, - 1327 Homes
Wimberly WSC, - 1000 Homes
Windthorst WSC, - 360 Homes
Woodbine WSC, - 1350 Homes
Woodlake Joshrand WSC, - 242 Homes
Woodlawn WSC, - 575 Homes
Woodrow Osceola WSC, - 1057 Homes
Wright City WSC, - 750 Homes
Wylie N. E. WSC, - 568 Homes
Yancy WSC, - 1250 Homes
Zapataco. Waterworks, - 2980 Homes
Zavalaco. Wcid #1, - 490 Homes
Zephyr WSC, - 1023 Homes

Utah

Abbey of Holy Trinity, - 1 Homes
Alpine, - 1019 Homes
Alton, - 25 Homes
Angus Water, - 40 Homes
Annabella, - 125 Homes
Aurora, - 284 Homes
Utah, - Ballard , - 250 Homes
Bear Lake Water, - 182 Homes
Bear River City, - 223 Homes
Bensen Wid, - 100 Homes
Bicknel, - 180 Homes
Blanding, - 1130 Homes
Bluff, - 57 Homes
Bothwel, - 94 Homes
Boulder Farmsted Wtr. Co., - 75 Homes
Brigham, - 4640 Homes
Burrville, - 13 Homes
Cainville, - 21 Homes
Canyon Country Sub., - 15 Homes
Casey Acres, - 12 Homes
Castle Valley Sud, - 2795 Homes
Cedar Fort, - 118 Homes
Cedar Ridge, - 30 Homes
Center Creek, - 63 Homes
Centerville, - 2250 Homes
Centra, - 135 Homes
Church Wells Ssd, - 35 Homes
Carkston, - 180 Homes
Cluff Ward, - 51 Homes
Coalville, - 425 Homes
Coleman, - 28 Homes
Community Water, - 500 Homes
Community Wtr Co, - 375 Homes
Cool Springs Water Co., - 75 Homes
Corinne, - 230 Homes
Council Meeting - Moroni, - 412 Homes
Cove Ssd, - 38 Homes
Croydon, - 29 Homes
Daggat County Ssd, - 162 Homes
Dagget Co. Wid, - 150 Homes
Dameron Valley, - 80 Homes
Delta, - 984 Homes
Delta Valley Cheese, - 1 Homes
Deseret-Oasis , - 167 Homes
Dewyville, - 117 Homes
Dinosaure National Park, - 10 Homes
Draper Irragation, - 1650 Homes
Duchesne, - 711 Homes
Dutch John, - 66 Homes
Eagal Springs Ssd, - 10 Homes
East Grouse Creek, - 50 Homes
Echo, - 30 Homes
Utah, - Elberta, - 45 Homes
Elk Ridge, - 300 Homes
Elsinore, - 312 Homes
Elwood, - 168 Homes
Enoch, - 595 Homes
Enterprise, - 420 Homes
Ephriam, - 1057 Homes
Erda Acres, - 25 Homes
Escalante Valley Water, - 35 Homes
Eskdale, - 28 Homes
Eureka, - 265 Homes
Fairfield, - 17 Homes
Fairview, - 436 Homes
Farmington, - 2500 Homes
Fielding-Ukon Water, - 268 Homes
Fillmore, - 843 Homes

Fountain Green, - 260 Homes
Francis, - 176 Homes
Freemont, - 100 Homes
Fruit Heights, - 1072 Homes
Fruitland, - 188 Homes
Garden City, - 650 Homes
Garland, - 600 Homes
Genola, - 210 Homes
Glen Canyon Ssd, - 71 Homes
Golden Gardens, - 45 Homes
Goosenest, - 19 Homes
Goshen, - 250 Homes
Grantsville, - 1218 Homes
Green River, - 372 Homes
Grouse Creek, - 50 Homes
Hanksville, - 57 Homes
Heber, - 1469 Homes
Heniffer, - 183 Homes
Hermatage, - 17 Homes
Highland Water, - 1419 Homes
Hinckley, - 184 Homes
Holden, - 180 Homes
Honeyville, - 362 Homes
Hoytsville, - 135 Homes
Hyde Park, - 515 Homes
Ivana, - 483 Homes
Junction, - 116 Homes
Kamas, - 412 Homes
Kanab, - 1300 Homes
Kanarsville, - 110 Homes
Utah, - Kanosh, - 234 Homes
Keyenta, - 50 Homes
Kingston, - 43 Homes
Laketown, - 105 Homes
Laverakin, - 571 Homes
Leamington, - 83 Homes
Lewiston, - 475 Homes
Liberty, - 116 Homes
Lincoln, - 117 Homes
Lindon, - 1084 Homes
Loa, - 220 Homes
Lyman, - 80 Homes
Lyndle, - 70 Homes
Lynndy, - 90 Homes
Manila, - 358 Homes
Manti, - 900 Homes
Marion, - 70 Homes
Marysvale, - 100 Homes
Mayfield, - 150 Homes
Meadow, - 155 Homes
Meadows Ranchos, - 10 Homes
Meadowville, - 8 Homes
Measer Wid, - 704 Homes
Millville, - 280 Homes
Moab, - 1500 Homes
Mona, - 200 Homes
Monroe, - 665 Homes
Monte Vista Water Co., - 57 Homes
Monticello, - 726 Homes
Monument Valley Water, - 21 Homes
Morgan, - 660 Homes
Moroni, - 412 Homes
Mt Pleasant, - 575 Homes
Mt. Meadow Park, - 15 Homes
Myton, - 188 Homes
N. Salt Lake, - 1285 Homes
Neola, - 200 Homes
Nephi, - 1350 Homes
New Castle, - 95 Homes
New Harmony, - 82 Homes
Newton, - 269 Homes
Nibley, - 334 Homes
North Logan, - 1108 Homes
North Salt Lake, - 1285 Homes
Oak City, - 112 Homes
Oak Meadows Sub., - 12 Homes
Utah, - Old Meadows Ranchos, - 100 Homes

Ophir, - 44 Homes
Panguitch, - 735 Homes
Paradise, - 189 Homes
Paragona, - 150 Homes
Park West, - 37 Homes
Perry, - 415 Homes
Peterson, - 87 Homes
Pleasant Grove, - 2925 Homes
Pleasantview, - 1300 Homes
Plymouth, - 94 Homes

Portage, - 82 Homes
Providence, - 800 Homes
Rainbow Ranchos, - 50 Homes
Randolph, - 200 Homes
Redmond, - 252 Homes
Richmond, - 530 Homes
River Hieghts, - 400 Homes
Riverdale, - 1394 Homes
Riverside Water, - 25 Homes
Roosevelt, - 1355 Homes
Salem, - 703 Homes
Santa Clara, - 550 Homes
Santaquin, - 750 Homes
Sherwood Shores, - 81 Homes
Siguard, - 153 Homes
Silver Springs, - 117 Homes
Smith Sub, - 1 Homes
Snowbasin, - 6 Homes
Snowville, - 83 Homes
South Weber, - 630 Homes
South Willard, - 85 Homes
Spanish Valley, - 500 Homes
Spring City, - 297 Homes
Spring Lake, - 115 Homes
Springdale, - 360 Homes
Stansbury Park Sed, - 463 Homes
Sterling, - 104 Homes
Stockton, - 165 Homes
Sunset, - 1620 Homes
Taylor-West Weber Water, - 1144 Homes
Thompson, - 35 Homes
Timpinogas Sed, - 8000 Homes
Torrey, - 250 Homes
Tremonton, - 1300 Homes
Trenton, - 135 Homes
Utah, - Tridell-Lapoint Wid, - 341 Homes
Tropic, - 190 Homes
U B Ranch, - 15 Homes
Uintah, - 287 Homes
Ukon Water, - 268 Homes
Upper Country Water, - 150 Homes
Verna, - 3371 Homes
Veyo, - 215 Homes
Virgin, - 115 Homes
Wales, - 83 Homes
Wanship, - 90 Homes
Washington City, - 2389 Homes
Washington Terrace, - 2745 Homes
Wellington, - 894 Homes
Wendover, - 293 Homes
West Boutifu, - 1020 Homes
West Corrine, - 400 Homes
West Enterprise, - 12 Homes
Wildwood, - 43 Homes
Wilkinson, - 136 Homes
Willard Bay Water, - 10 Homes
Willow Creek Water, - 5 Homes
Woodland Hills Town, - 100 Homes
Woodruff, - 60 Homes
Woodscross, - 1429 Homes
Homes
Homes
Virginia, - A-P Hil, - 110 Homes
Accomock County, - 0 Homes
Amherst, - 912 Homes
Appomattox, - 745 Homes
Ashland, - 1950 Homes
Bath County , - 400 Homes
Bayse - Stoney Creek Santit y District, - 1110 Homes
Bedford, - 3000 Homes
Berryville, - 1000 Homes
Botetourt Co, - 500 Homes
Bowling Green, - 700 Homes
Boydton, - 271 Homes
Boykins, - 350 Homes
Bridgewater, - 1530 Homes
Broadnax, - 192 Homes
Broadway, - 630 Homes
Brooknes, - 494 Homes
Buchanan, - 485 Homes
Buchingham Co, - 151 Homes
Virginia, - Burksville, - 291 Homes
Cape Charles, - 854 Homes
Caroline Co. Public Works, - 25 Homes
Cave Mt Lake, - 18 Homes
Charlotte , - 248 Homes
Chase City, - 1300 Homes

Chatham, - 912 Homes
Chilhowie, - 2000 Homes
Churchville-Augusta Co. Service Authority, - 222 Homes
City of Buena Vista, - 2225 Homes
City of Emporia, - 2300 Homes
City of Franklin, - 9000 Homes
City of Lexington, - 2300 Homes
Claremont, - Homes
Clarke County Water, - 560 Homes
Clarksville, - 710 Homes
Clifton Forge Wtp, - 1950 Homes
Clover, - 150 Homes
Coarline Co, - 250 Homes
Coeburn Psa, - 550 Homes
Courtland, - 420 Homes
Covington, - 3224 Homes
Craigsville, - 450 Homes
Crew, - 1100 Homes
Crozet, - 460 Homes
Culpeper, - 3660 Homes
Daleville, - 69 Homes
Dayton, - 720 Homes
Deerfield Water, - 27 Homes
Dillwyn, - 270 Homes
Drakes Branch, - 240 Homes
Duffield - Water Plant, - 98 Homes
Eastville, - 170 Homes
Elkton, - 899 Homes
Elliston, - 500 Homes
Emporia, - 2300 Homes
Exmore, - 620 Homes
Farmville, - 1715 Homes
Ferrum, - 141 Homes
Fincastle, - 290 Homes
Floyd, - 426 Homes
Forest Water Co, - 190 Homes
Fork Union San Dist, - 350 Homes
Fort Ap Hil, - 82 Homes
Fort Pickett, - 130 Homes
Fox Run Water Co., - 459 Homes
Virginia, - Franklin, - 3475 Homes
Frederick Co Sa, - 4600 Homes
Fries, - 300 Homes
Galax, - 2685 Homes
Giles County, - 20 Homes
Glasgow, - 462 Homes
Gordansville, - 600 Homes
Goshen, - 270 Homes
Green County Rappadan Service Authority, - 1000 Homes
Gretna, - 641 Homes
Grottoes, - 700 Homes
Halifax, - 640 Homes
Hamilton, - 600 Homes
Hanover, - 815 Homes
Heritage Point, - 70 Homes
Hillsville, - 1350 Homes
Hoges Chape, - 240 Homes
Independence, - 512 Homes
Iron Gate, - 220 Homes
Isle of Wight, - 350 Homes
Jackson Field, - 17 Homes
Kenbridge, - 660 Homes
Keysville, - 464 Homes
Kingsdale-Moseley, - 40 Homes
Lawrenceville, - 900 Homes
Lebanon Water Plant, - 1850 Homes
Long Hollow Water, - 212 Homes
Louisa Co. Water Authority, - 51 Homes
Lovettsville, - 350 Homes
Luray, - 2052 Homes
Marion, - 3473 Homes
Marshal, - 500 Homes
Maury Service Authority, - 2800 Homes
Mcdowel, - 81 Homes
Miller Schoo, - 17 Homes
Minera, - 333 Homes
Monterey, - 225 Homes
Montgomery Co , - 2500 Homes
Montross, - 250 Homes
Mountain Lake, - 20 Homes
Mt Jackson, - 823 Homes
Narrows, - 1113 Homes
Natural Bridge Cave Mt Lake, - 18 Homes
New Castle, - 426 Homes
New Market, - 720 Homes
Norton, - 2015 Homes

Virginia, - Oakland, - 100 Homes
Onancock, - 750 Homes
Orange, - 2000 Homes
Pamplin City, - 189 Homes
Parksley, - 425 Homes
Pearisburg, - 1300 Homes
Peidmont Geratric Hosp, - 22 Homes
Pembroke, - 575 Homes
Pulaski, - 4230 Homes
Purcellville, - 1000 Homes
Ranger Station Natural Bridge, - 18 Homes
Rapidan Service Authority, - 1304 Homes
Remington, - 400 Homes
Ridge Utilities, - 460 Homes
Rivermont, - 40 Homes
Rockbridge Co Psa, - 830 Homes
Rocky Mount, - 2140 Homes
Round Hil, - 300 Homes
Ruckersville, - 2310 Homes
Rural Retreat, - 785 Homes
Rye Valley Water Auth., - 400 Homes
Scheyler - Nelson County Service Authority, - 185 Homes
Scottsburg, - 114 Homes
Shawsville, - 600 Homes
Shenandoah, - 800 Homes
Smithfield, - 2000 Homes
South Boston, - 3500 Homes
South Hil, - 2131 Homes
Southampton County, - 1000 Homes
Springwood Hosp Leesburg, - 2 Homes
St. Pau, - 480 Homes
Stanley, - 1245 Homes
Staunton River State Park, - 15 Homes
Stephans City, - 1000 Homes
Stoney Creek Sanitary Dist, - 1000 Homes
Strasburg, - 1434 Homes
Stuart, - 668 Homes
Sunnyland Farms, - 26 Homes
Surry, - 200 Homes
Sweet Briar College, - 40 Homes
T-I Water Co, - 160 Homes
Thomas Bridge, - 1400 Homes
Three Sisters Trailer Park, - 18 Homes
Timberville, - 900 Homes
Toms Brook, - 335 Homes
Town of Altavista, - 1500 Homes
Virginia, - Town of Blackstone, - 1200 Homes
Town of Bluefield, - 2300 Homes
Town of Boones Mil, - 184 Homes
Town of Boyce, - 240 Homes
Town of Colonial Beach, - 1950 Homes
Town of Front Roya, - 3000 Homes
Town of Hurt, - 580 Homes
Town of Lovingston, - 2170 Homes
Town of Montross, - 275 Homes
Town of Mount Jackson, - 825 Homes
Town of Trout Dale, - 85 Homes
Triangle Mhp, - 100 Homes
Urbanna, - 520 Homes
US Forest Service Natural Bridge, - 18 Homes
Victoria, - 825 Homes
Vinton, - 2800 Homes
Virgilian, - 110 Homes
Warm Springs, - 510 Homes
Warrenton, - 2870 Homes
Warsaw, - 430 Homes
Waverly, - 1100 Homes
Westpoint, - 1115 Homes
Windsor, - 700 Homes
Wise, - 5100 Homes
Woodhaven Water Co, - 390 Homes
Woodstock, - 2000 Homes
Wytheville, - 3075 Homes
Homes
Homes
Washington, - Acme Water District #18, - 100 Homes
Adams Co.#1, - 189 Homes
Alger Water Community, - 50 Homes
Algona, - 750 Homes
Almira, - 160 Homes
Ames Lake Water Association, - 680 Home.

Anacortes, - 5500 Homes
Arlington Water District, - 1700 Homes

Ashford Water District, - 250 Homes
Battle Ground, - 1450 Homes
Bayview Beach Water District, - 325 Homes
Beach Haven, - 20 Homes
Belfair Water #1, - 500 Homes
Beverly, - 27 Homes
Bingen, - 350 Homes
Black Diamond, - 550 Homes
Blue Spruce Water District, - 190 Homes
Virginia, - Bluespruce, - 200 Homes
Burlington, - 2285 Homes
Camano Water Assn., - 628 Homes
Cape Horn Maintenance Co, - 150 Homes
Cape Horn Water Assn, - 200 Homes
Carnation, - 900 Homes
Castle Rock, - 980 Homes
Cedar Lane Water Assn., - 175 Homes
Chinook, - 300 Homes
City of Algona, - 760 Homes
City of Arlington, - 1200 Homes
City of Bingen, - 307 Homes
City of Brewster, - 650 Homes
City of Carnation, - 600 Homes
City of Cashmere, - 1000 Homes
City of Chelan, - 1200 Homes
City of Chewelah, - 1000 Homes
City of Clear Elum, - 1000 Homes
City of Colfax, - 780 Homes
City of Colville, - 2000 Homes
City of Concrete, - 400 Homes
City of Cosmopolis, - 578 Homes
City of Dayton, - 1455 Homes
City of Deer Park, - 650 Homes
City of Duval, - 998 Homes
City of Eatonville, - 550 Homes
City of Ellensburg, - 6000 Homes
City of Elma, - 1000 Homes
City of Ephrata, - 2400 Homes
City of Everson, - 725 Homes
City of Granite Falls, - 428 Homes
City of Illwaco, - 335 Homes
City of Kettle Falls, - 819 Homes
City of Kittitas, - 304 Homes
City of Laconner, - 503 Homes
City of Leavenworth, - 1000 Homes
City of Lind, - 347 Homes
City of Long Beach, - 1700 Homes
City of Milton, - 2000 Homes
City of Monroe, - 2200 Homes
City of Montesano, - 1400 Homes
City of Morton, - 740 Homes
City of Mossyrock, - 565 Homes
City of Newport, - 490 Homes
City of Nooksack, - 100 Homes
City of North Bend, - 1000 Homes
Virginia, - City of Okanogan, - 950 Homes
City of Omak, - 1700 Homes
City of Oroville, - 430 Homes
City of Orting, - 500 Homes
City of Othello, - 1300 Homes
City of Pacific, - 1050 Homes
City of Pateros, - 204 Homes
City of Pear El, - 350 Homes
City of Port Townsend, - 4500 Homes
City of Quincy, - 1200 Homes
City of Raymond, - 881 Homes
City of Ritzville, - 675 Homes
City of Rock Island, - 243 Homes
City of Roslyn, - 260 Homes
City of Royal City, - 234 Homes
City of Selah, - 1000 Homes
City of Sequim, - 1200 Homes
City of Snohomish, - 2300 Homes
City of Soap Lake, - 720 Homes
City of South Bend, - 900 Homes
City of Sprague, - 261 Homes
City of Stanwood, - 1200 Homes
City of Steilacoom, - 1715 Homes
City of Stevenson, - 540 Homes
City of Sumas, - 350 Homes
City of Tekoa, - 250 Homes
City of Tonasket, - 520 Homes
City of Union Gap, - 1200 Homes
City of Vantage, - 50 Homes
City of Washouga, - 2216 Homes
City of Waterville, - 400 Homes
City of White Salmon, - 868 Homes
Clear Elum, - 900 Homes

Clearlake Water District, - 200 Homes
Clinton Water District, - 600 Homes
Colfax, - 850 Homes
College Place, - 1600 Homes
Collins Lake Water Association, - 93 Homes
Conconlly, - 172 Homes
Concrete, - 400 Homes
Connel, - 1000 Homes
Coulee City, - 400 Homes
Coulee Dam, - 330 Homes
Coupeville, - 877 Homes
Cedar River W.i.d., - 4200 Homes
Cross Valley Water District, - 3900 Homes
Virginia, - Cusick, - 235 Homes
Darrington, - 350 Homes
Davenport, - 700 Homes
Dayton, - 1400 Homes
Deer Creek Water Assn., - 420 Homes
Deer Park, - 1000 Homes
Deerlake Water Association, - 20 Homes
Delta Water, - 170 Homes
Demming, - 76 Homes
Deseret Air, - 660 Homes
Dixie, - 90 Homes
Doe Bay, - 250 Homes
Douglas County Counci, - 7600 Homes
Duval, - 1000 Homes
East Sound, - 660 Homes
East Wenatchee Water District, - 7600 Homes
Elbe Water & Sewer District, - 50 Homes
Electric City, - 400 Homes
Elma, - 1100 Homes
Elmer City, - 210 Homes
Entiat, - 300 Homes
Enumclaw, - 2000 Homes
Ephrata, - 2400 Homes
Evans Water Association, - 16 Homes
Everson, - 725 Homes
Fairview Water, - 30 Homes
Fall City Water (King Co#18), - 886 Homes
Fir Croft Water, - 20 Homes
Fisherman Bay Water District, - 66 Homes
Fordair Water Co-op, - 19 Homes
Freeland Water District, - 203 Homes
George, - 150 Homes
Goldbar , - 497 Homes
Goldendale, - 1360 Homes
Grand Coulee, - 990 Homes
Granite Falls, - 475 Homes
Half-moon Water Association, - 71 Homes
Hamilton, - 75 Homes
Hampton Water Association, - 18 Homes
Hartline, - 87 Homes
Heart of the Hill Water Assn, - 40 Homes
Indian Ridge, - 72 Homes
Ione, - 250 Homes
Johnson Creek Water Assn., - 30 Homes
Kahlotus, - 101 Homes
Kalama, - 1000 Homes
Homes
Virginia, - Kenwood Estates Water Assn., - 15 Homes
Kittitas, - 340 Homes
Klickatas, - 450 Homes
Klickatat P.u.d., - 510 Homes
Klickutat Co. P.u.d., - 940 Homes
Knutson Farms Wat. Sys., - 8 Homes
La Conner, - 563 Homes
Lake Allison Water Association, - 30 Homes
Lake Bosworth Water System, - 30 Homes
Lake Margaret Water Association, - 100 Homes
Lake Sam Improvement Assn., - 67 Homes
Langley Water System, - 750 Homes
Leavenworth, - 860 Homes
Loch Haven Water Association, - 40 Homes
Loomis W. U., - 90 Homes
Loon Lake Sewer Dist.#4, - 865 Homes
Lopez School Dist.water System, - 350 Homes
Love Foundation Water System, - 15 Home
Lower Lynch Cove Water Assn, - 37 Homes
Lummi Nation Water Dept., - 200 Homes
Lyman, - 175 Homes
Lynden, - 400 Homes
Mabton, - 450 Homes
Maple Grove Water Assn, - 32 Homes

Mattawa, - 360 Homes
Mchaven Water System, - 30 Homes
Mckee's Hilltop Owners Water Assn,- 17 Homes
Meadowglade Water Assn, - 526 Homes
Medical Lake, - 815 Homes
Mesa, - 160 Homes
Milton, - 2000 Homes
Morton, - 740 Homes
Mossy Rock, - 650 Homes
Mt View, - 134 Homes
Naches, - 330 Homes
Nespelem, - 200 Homes
New Port, - 900 Homes
Nooksack, - 250 Homes
Nooksack Valley Water Assn., - 55 Homes
North Bend, - 1000 Homes
North Bonneville, - 500 Homes
Odessa, - 500 Homes
Okanogan, - 950 Homes
Olga, - 100 Homes
Omak, - 1400 Homes
Onalaska, - 136 Homes
Virginia, - Orcus Landing, - 24 Homes
Orondo Water Association, - 2 Homes
Oroville, - 900 Homes
Orthello, - 1610 Homes
Othello, - 1300 Homes
Pacific, - 1200 Homes
Packwood, - 260 Homes
Paterson, - 29 Homes
Pear El, - 350 Homes
Pend Oreille P.u.d., - 600 Homes
Pine Grove Water Assn, - 120 Homes
Plymouth, - 50 Homes
Pomeroy, - 750 Homes
Port Ludlow Water & Sewer, - 900 Homes
Port of Royal Slope, - 0 Homes
Port Orchard, - 1400 Homes
Possession Shores Water Assoc., - 57 Homes
Potaros, - 250 Homes
Poulsbo, - 1500 Homes
Prescott, - 160 Homes
Pressentin Wilderness Wat.assn, - 60 Homes
Prosser, - 1000 Homes
Rainbow Springs Water Assoc., - 218 Homes
Rainbow Springs Water District, - 9 Homes
Rainier View Water Association, - 38 Homes
Rande, - 200 Homes
Reardon, - 200 Homes
Republic, - 465 Homes
Ritzville, - 1800 Homes
Riverside, - 126 Homes
Rock Island, - 279 Homes
Rocky Point Heights Water Assn, - 63 Homes
Ronald, - 100 Homes
Rosyln, - 657 Homes
Royal City, - 234 Homes
Roza Heights Water Association, - 60 Homes
Ryderwood, - 250 Homes
Sallal Water Association, - 1128 Homes
Sam Lake, - 150 Homes
Sandpiper Water, - 8 Homes
Sauk-suiattle Indian Tribe, - 20 Homes
Scatchet Head Water District, - 276 Homes
Seaton Grove, - 28 Homes
Sedro Woolley, - 2500 Homes
Selah, - 1280 Homes
Seven Lakes Water Assn, - 1520 Homes Homes
Virginia, - Shelton, - 2350 Homes
Sillah, - 1700 Homes
Silverdale, - 4000 Homes
Silverlake Water Association, - 8800 Homes
Skagit County Pud #1, - 17000 Homes
Skykomish, - 300 Homes
Snohomish Co. P.u.d. #1, - 7800 Homes
Snoqualmie, - 850 Homes
Snoqualmie Pass Sewer District, - 410 Homes
Snoqualmie Sewer District, - 500 Homes
So. Cle Elum, - 250 Homes

Soap Lake, - 700 Homes
Sound View Vista Water Assoc., - 26 Homes

Spangle, - 150 Homes
Stanwood, - 130 Homes
Stanwood Wd, - 1200 Homes
St buck, - 90 Homes
Stevens County Pud #1, - 3000 Homes
Stevenson, - 632 Homes
Storm Lake, - 20 Homes
Strathview Water District, - 86 Homes
Sulton, - 846 Homes
Sumas, - 350 Homes
Sumner, - 2300 Homes
Sunlight Beach/sunvista Water, - 126 Homes

Sunny Vista, - 46 Homes
Sunnyside, - 3000 Homes
Sunnyslope, - 240 Homes
Sunset Ranch Summer Homes, - 60 Homes
Sunset Summer Homes, - 54 Homes
Timberlane, - 60 Homes
Tonasket, - 500 Homes
Toppenish, - 2100 Homes
Town of Baring, - 65 Homes
Town of Chelan Falls, - 130 Homes
Town of Creston, - 130 Homes
Town of Dupont, - 189 Homes
Town of Entiat, - 180 Homes
Town of George, - 110 Homes
Town of Gold Bar , - 465 Homes
Town of Hamilton, - 75 Homes
Town of Index, - 120 Homes
Town of Lyman, - 175 Homes
Town of Mansfield, - 136 Homes
Town of Marcus, - 64 Homes
Town of Mattawa, - 380 Homes
Virginia, - Town of Mccleary, - 636 Homes
Town of Monitor, - 67 Homes
Town of Sprague, - 130 Homes
Town of Startup, - 161 Homes
Town of Waterville, - 489 Homes
Town of Wilbur, - 412 Homes
Tulalip Tribes Utility Authority, - 1000 Homes
Union Gap, - 1200 Homes
Vantage, - 50 Homes
Waitsburg, - 530 Homes
Wallula, - 50 Homes
Warm Beach Water Association, - 361 Homes
Waterville, - 420 Homes
Waverly, - 61 Homes
Weat Mesa, - 86 Homes
Westsound, - 34 Homes
Whitworth Water District, - 6000 Homes
Wickersham Water Assn, - 35 Homes
Wilbur, - 250 Homes
Wilderness Village Wat Assn/pud, - 93 Homes
Wilderness Village Water Assn., - 28 Homes

Willapa Valley, - 270 Homes
Woodland , - 750 Homes
Yakima Co.w.d., - 1000 Homes
Zillah, - 794 Homes
Homes
Homes
Homes
Wisconsin, - Abbotsford, - 600 Homes
Adams, - 600 Homes
Algoma, - 1045 Homes
Alma, - 400 Homes
Alma Center, - 200 Homes
Altoon, - 1100 Homes
Altoona, - 1200 Homes
Amery, - 1200 Homes
Amherst, - 200 Homes
Antigo, - 2472 Homes
Arcadia, - 900 Homes
Argyle, - 500 Homes
Arlington, - 400 Homes
Ashland, - 3000 Homes
Athena, - 400 Homes
Auburndale, - 183 Homes
Avoca, - 290 Homes
Baldwin, - 800 Homes
Wisconsin, - Balsam Lake, - 300 Homes

Bangor, - 300 Homes
Baraboo, - 3000 Homes
Barron, - 900 Homes
Bear Creek, - 130 Homes
Birnamwood, - 197 Homes
Biron, - 400 Homes
Black River Falls, - 1000 Homes
Bloomer, - 1000 Homes
Blue Mounds, - 200 Homes
Boscobe, - 850 Homes
Boyceville, - 4450 Homes
Boyd, - 189 Homes
Broadway, - 200 Homes
Brooklyn, - 300 Homes
Browntown, - 400 Homes
Bruce, - 200 Homes
Burlington, - 2500 Homes
Butternut, - 350 Homes
Cadott, - 800 Homes
Cambridge, - 241 Homes
Cameron, - 450 Homes
Camp Douglas, - 200 Homes
Cashton, - 500 Homes
Cassenovia, - 300 Homes
Cassville, - 600 Homes
Centuria, - 350 Homes
Chaseburg, - 250 Homes
Chetek, - 600 Homes
Chilton, - 1200 Homes
Clinton, - 800 Homes
Clintonville, - 1305 Homes
Cochrane, - 240 Homes
Colby, - 600 Homes
Colfax, - 900 Homes
Colman, - 400 Homes
Coloma, - 300 Homes
Columbus, - 1500 Homes
Coon Valley, - 300 Homes
Cornel, - 950 Homes
Crivitz, - 450 Homes
Cumberland, - 970 Homes
Deerfield, - 419 Homes
Deforest, - 962 Homes
Dickyville, - 600 Homes
Dorchester, - 300 Homes
Wisconsin, - Downsville, - 75 Homes
Dresser, - 400 Homes
Drummond, - 210 Homes
Durand, - 1000 Homes
Eagle, - 300 Homes
Eagle River, - 600 Homes
Edgar , - 400 Homes
Elcho Sd, - 115 Homes
Eleva, - 300 Homes
Elk Horn, - 1316 Homes
Elk Mound, - 400 Homes
Ellsworth, - 1000 Homes
Elmwood, - 300 Homes
Elroy, - 700 Homes
Ephreim, - 0 Homes
Etterick, - 280 Homes
Evansville, - 900 Homes
Fairchild, - 180 Homes
Fennimore, - 700 Homes
Fountain City, - 275 Homes
Fox Lake, - 900 Homes
Frederick, - 700 Homes
Fredonia, - 700 Homes
Galesville, - 800 Homes
Glenwood City, - 600 Homes
Granstburg, - 700 Homes
Granton, - 180 Homes
Green Lake, - 800 Homes
Greenwood, - 400 Homes
Gresham, - 400 Homes
Hallie, - 160 Homes
Hammmond, - 430 Homes
Hancock, - 300 Homes
Harmony Grove Sd, - 400 Homes
Hatley, - 86 Homes
Hayward, - 900 Homes
Hillsboro, - 600 Homes
Hixton, - 250 Homes
Holmen, - 1000 Homes
Horicon, - 1000 Homes
Hurley, - 700 Homes
Hustiford, - 250 Homes
Hustler, - 15 Homes

Independence, - 900 Homes
Iola, - 275 Homes
Iron Belt, - 180 Homes
Homes
Wisconsin, - Johnson Creek, - 900 Homes
Junction City, - 149 Homes
Kendal, - 250 Homes
Kewaunee, - 800 Homes
Knapp, - 290 Homes
Ladysmith, - 1000 Homes
Lafarge, - 380 Homes
Lake Delton, - 100 Homes
Lakeland Sd, - 750 Homes
Land O' Lakes, - 65 Homes
Lavalle, - 350 Homes
Livingston, - 310 Homes
Loganville, - 180 Homes
Loya, - 400 Homes
Lyndon Station, - 200 Homes
Maherst, - 200 Homes
Maiden Rock, - 180 Homes
Manawa, - 344 Homes
Marathon City, - 475 Homes
Marion, - 385 Homes
Marshal, - 575 Homes
Mattoon, - 300 Homes
Mauston, - 1000 Homes
Mazomanie, - 700 Homes
Mellen, - 320 Homes
Melrose, - 300 Homes
Merimac, - 104 Homes
Merrilan, - 300 Homes
Merril, - 2737 Homes
Merrillan, - 300 Homes
Milton, - 1500 Homes
Montello, - 800 Homes
Montfort, - 400 Homes
Mosinee, - 1000 Homes
Motrea, - 320 Homes
Mount Horeb, - 1000 Homes
Necedah, - 700 Homes
Neilsville, - 1000 Homes
Nekoosa, - 900 Homes
Nelson, - 280 Homes
New Auburn, - 200 Homes
New Holstein, - 1200 Homes
New Lisbon, - 450 Homes
New London, - 1500 Homes
New Richmond, - 1500 Homes
North Fond du Lac, - 1000 Homes
Wisconsin, - North Freedom, - 300 Homes
Norwalk, - 350 Homes
Oakdale, - 60 Homes
Oakfield, - 283 Homes
Omro, - 900 Homes
Onalaska, - 3500 Homes
Ontario, - 250 Homes
Oregon, - 380 Homes
Owen, - 500 Homes
Palmyra, - 500 Homes
Pardeeville, - 455 Homes
Pepin, - 500 Homes
Phelps, - 220 Homes
Phillips, - 1000 Homes
Pittsville, - 400 Homes
Plainfield, - 450 Homes
Plover, - 2510 Homes
Port Edwards, - 700 Homes
Portage, - 3200 Homes
Potosi, - 200 Homes
Prairie du Chein, - 1100 Homes
Prairie du Sac, - 900 Homes
Prentice, - 500 Homes
Prescott, - 900 Homes
Princeton, - 500 Homes
Readstown, - 290 Homes
Red Granite, - 450 Homes
Reedsburg, - 2000 Homes
Rhinelander, - 2700 Homes
Rib Lake, - 500 Homes
Rib Mt, - 900 Homes
Rib Mt Sd, - 1500 Homes
Ridgeway, - 350 Homes
Rio, - 450 Homes
Roberts, - 700 Homes
Rock Springs, - 300 Homes
Rothchild, - 954 Homes
Sauk City, - 950 Homes

Saukville, - 1000 Homes
Scholfield, - 636 Homes
Seymour, - 980 Homes
Sharon, - 450 Homes
Shawano, - 3200 Homes
Shawano Lake Sd, - 1200 Homes
Shawano Sd, - 1428 Homes
Shelby, - 200 Homes
Wisconsin, - Shell Lake, - 600 Homes
Shullsburg, - 575 Homes
Sister Bay, - 700 Homes
Slinger, - 461 Homes
Soldiers Grove, - 240 Homes
Somerset, - 600 Homes
South Wayne, - 280 Homes
Sparta, - 3000 Homes
Spencer, - 600 Homes
Spooner, - 1200 Homes
Spring Green, - 700 Homes
Spring Valley, - 320 Homes
St Croix Falls, - 700 Homes
St. John's - Random Lake, - 26 Homes
Stanley, - 599 Homes
St Prairie, - 300 Homes
Stoddard, - 320 Homes
Stone Lake, - 68 Homes
Stratford, - 500 Homes
Strum, - 310 Homes
Taylor, - 240 Homes
Theresa, - 500 Homes
Thorp, - 467 Homes
Token Creek Sd, - 10 Homes
Tomah, - 2800 Homes
Tomahawk, - 1200 Homes
Trempeleau, - 375 Homes
Turtle Lake, - 350 Homes
Union Center, - 210 Homes
Valders, - 550 Homes
Vesper, - 400 Homes
Viola, - 350 Homes
Viroqua, - 1000 Homes
Waldo, - 350 Homes
Warrens, - 200 Homes
Washburn, - 500 Homes
Waterford, - 628 Homes
Waupaca, - 1200 Homes
Waupun, - 2323 Homes
Wausaukee, - 310 Homes
Wautoma, - 465 Homes
Waverly Sd, - 650 Homes
Webster, - 500 Homes
West Baraboo, - 700 Homes
West Salem, - 1100 Homes
Westby, - 500 Homes
Wisconsin, - Weston Sd, - 1715 Homes
Weyewega, - 442 Homes
Wheeler, - 100 Homes
Whiting, - 530 Homes
Wilson, - 70 Homes
Wilton, - 280 Homes
Windsor Sd, - 286 Homes
Winneconne, - 700 Homes
Wis Dells, - 1100 Homes
-ee, - 300 Homes
Wittenberg, - 700 Homes
Wonnewoc, - 300 Homes
Woodville, - 310 Homes
Wyocena, - 400 Homes
Homes
Homes
Homes
West Virginia, - Albright, - 250 Homes
Albright Psd, - 111 Homes
Alderson, - 720 Homes
Alpine Lake, - 280 Homes
Anawalt, - 275 Homes
Anmore, - 425 Homes
Anstead, - 940 Homes
Arbuckly Psd, - 300 Homes
Armstrong Creek Psd, - 800 Homes
Athens, - 1500 Homes
Bd of Ed., - 1000 Homes
Beechbottom Water, - 500 Homes
Behtlehem Psd, - 1250 Homes
Belington, - 60 Homes
Benwood, - 733 Homes
Berkley Springs, - 1300 Homes
Bethany Water, - 550 Homes

Bethelehm Psd, - 1250 Homes
Beverly Springs, - 1300 Homes
Beverly Water Co., - 750 Homes
Beverly Water Dept., - 742 Homes
Big Bend Psd, - 380 Homes
Big Four, - 158 Homes
Big Sandy Psd, - 800 Homes
Bluewell Psd, - 1600 Homes
Board of Ed. Brooke County, - 500 Homes
Bolair Psd, - 176 Homes
Bolington, - 850 Homes
Bradley Psd, - 206 Homes
West Virginia, - Bramwel, - 275 Homes
Branchland-Midkiff Psd, - 575 Homes
Brandywine Psd, - 249 Homes
Branwell Psd, - 300 Homes
Brenton Psd, - 145 Homes
Bridgeport, - 3800 Homes
Buckhannon, - 3000 Homes
Buffalo, - 330 Homes
Bunker Hil, - 4100 Homes
Burchfield Water Dept., - 250 Homes
Burnsville, - 400 Homes
Cabon Bridge, - 196 Homes
Camden on Gauley, - 190 Homes
Cameron Water Dept., - 600 Homes
Capon Bridge, - 190 Homes
Carbron Dakato, - 60 Homes
Cario, - 181 Homes
Cavetta, - 200 Homes
Central Hampshire Psd, - 744 Homes
Century Vola Psd, - 400 Homes
Chapmanville, - 1600 Homes
Charlestown, - 3400 Homes
Chester, - 1250 Homes
City Grafton Water Dept., - 3000 Homes
City of Anmoore, - 425 Homes
City of Belington, - 820 Homes
City of Bethany, - 550 Homes
City of Charlestown, - 3400 Homes
City of Elkins Water Dept., - 1100 Homes
City of Follansbee, - 1450 Homes
City of Martinsburg, - 4000 Homes
City of McMechen, - 94 Homes
City of Wellsburg, - 1525 Homes
Clarksburg, - 8492 Homes
Clay Battelle Psd, - 891 Homes
Claywood Park, - 2500 Homes
Clendenin, - 900 Homes
Clifftop Water Assoc., - 30 Homes
Clinton Water Assoc., - 2000 Homes
Coal Ridge Flat Top, - 1000 Homes
Coal River Psd, - 2800 Homes
Coalcity, - 1200 Homes
Coalwood-McDowell Co Psd, - 250 Homes
Cottageville Psd, - 1000 Homes
Craigsville, - 600 Homes
Craigsville Psd, - 1400 Homes
Homes
West Virginia, - Cross Creek Psd, - 80
Homes
Culloden Psd, - 1100 Homes
Danese, - 450 Homes
Davis Water Co., - 425 Homes
Distribution Mason Co. Psd, - 2300 Homes
District No. 3, - 978 Homes
Drovers Inn, - 1091 Homes
Duo, - 20 Homes
East Bank, - 450 Homes
Eleanor, - 1100 Homes
Elkins, - 3000 Homes
Elkins Water Plant, - 1100 Homes
Evans Psd, - 500 Homes
Falansbee Water Dept., - 1450 Homes
Fayeteville, - 1700 Homes
Flatwoods Canoe Run Psd, - 1000 Homes
Follansbee Water Dept, - 1450 Homes
Fort Ashby, - 500 Homes
Frank, - 200 Homes
Franklin, - 550 Homes
Friendly, - 283 Homes
Friendly Water, - 165 Homes
Gap Mila, - 154 Homes
Gary, - 900 Homes
Gauley River Psd, - 575 Homes
Gilbert, - 300 Homes
Glen Dale Water, - 1200 Homes
Glen White Trap Hil, - 1700 Homes

Glendale, - 1200 Homes
Glenville, - 900 Homes
Grafton Water, - 2879 Homes
Grant Co. Psd, - 1700 Homes
Grant Psd, - 750 Homes
Grantsville, - 1000 Homes
Green Valley Glenwood, - 2000 Homes
Greenbrier Co.psd #2, - 550 Homes
Greenvalley Glenwood Psd, - 1600 Homes
Greenville Psd, - 64 Homes
Hammonds Psd, - 900 Homes
Hampshire Co. Psd, - 744 Homes
Hamrick Psd, - 609 Homes
Harpers Ferry, - 750 Homes
Harrisville Municipa, - 900 Homes
Hedgesville, - 1067 Homes
Hepzibah Psd, - 750 Homes
Hiawatha, - 28 Homes
West Virginia, - Hillsboro, - 160 Homes
Hooverson Heidghts Psd, - 1962 Homes
Hughes River Psd, - 3000 Homes
Hundred &Littleton Psd, - 265 Homes
Hurricane, - 2500 Homes
Huttonsville, - 100 Homes
Jane Lew, - 380 Homes
Jefferson Co Psd, - 200 Homes
Jumping Branch Nimitz Psd, - 375 Homes
Junior, - 280 Homes
Justice Psd, - 290 Homes
Kanawha Falls Community, - 36 Homes
Kanawha Falls Psd, - 1140 Homes
Kellys Tank, - 20 Homes
Kermit, - 350 Homes
Keyser, - 2300 Homes
Keystone, - 300 Homes
Kingwood, - 1400 Homes
Kopperston, - 240 Homes
Lashmeet Psd, - 869 Homes
Lavelette Psd, - 2200 Homes
Lester Psd, - 300 Homes
Lewisburg, - 3400 Homes
Littleton, - 90 Homes
Logan, - 2552 Homes
Lumberport, - 657 Homes
Man, - 500 Homes
Mannington Water, - 1032 Homes
Marianna Psd, - 24 Homes
Marlington, - 532 Homes
Marshall Co, - 1250 Homes
Martinsburg Water Dept., - 4000 Homes
Mason Co. Psd, - 2300 Homes
Matewan, - 700 Homes
Matheney Psd, - 200 Homes
Matheny Psd, - 250 Homes
Matoka, - 250 Homes
Mcdowell Buckhannon, - 28 Homes
McMechen, - 940 Homes
Meadow Bridge, - 265 Homes
Mechen, - 940 Homes
Middlebourne Water, - 550 Homes
Mill Creek, - 950 Homes
Milton, - 1700 Homes
Mineral Wells Psd, - 1300 Homes
Homes
West Virginia, - Mononagh, - 1393 Homes
Moorefield, - 2000 Homes
Morgantown Utility Board, - 1600 Homes
Mossy, - 400 Homes
Mossy Psd, - 260 Homes
Moundsville Water Dept., - 5000 Homes
Mt. Hope, - 1500 Homes
Mt. Top Psd, - 1100 Homes
Mt. Zion Psd, - 346 Homes
Mullens, - 1600 Homes
Nettie Leivasay Psd, - 1100 Homes
New Cumberland Water, - 650 Homes
New Manchester Psd, - 630 Homes
New Martinsburg, - 3050 Homes
New Richmond Psd, - 136 Homes
Newel, - 850 Homes
North Fork, - 320 Homes
North Franklin Psd, - 90 Homes
North Putnam, - 800 Homes
Nutterfort, - 800 Homes
Oceana, - 1300 Homes
Ohio Co Psd, - 3500 Homes
Opephon Psd, - 3200 Homes
Orbit Acres, - 12 Homes

Paden City Psd, - 1248 Homes
Page Kincaid Psd, - 650 Homes
Parsons, - 850 Homes
Paw Paw, - 500 Homes
Pax, - 220 Homes
Pendleton Co. Psd, - 160 Homes
Pennsboro, - 690 Homes
Petersburg, - 1100 Homes
Philippi Water, - 1320 Homes
Piedmont, - 1000 Homes
Pinch Psd, - 1600 Homes
Pineville, - 1400 Homes
Pocahontas, - 900 Homes
Pratt, - 700 Homes
Preston Co. Psd, - 700 Homes
Procious Psd, - 700 Homes
Putnam Union, - 700 Homes
Queens Shoals Psd, - 80 Homes
Rainelle, - 900 Homes
Raleigh Co. Psd, - 3000 Homes
Ravenswood Water, - 1901 Homes
Red Jacket, - 200 Homes
Homes
West Virginia, - Red Sulphur District Psd, - 1100 Homes
Rhodel, - 160 Homes
Richwood, - 1100 Homes
Ridgeley, - 346 Homes
Ripley Water Dept, - 1560 Homes
Rivesville Psd, - 640 Homes
Romney, - 1000 Homes
Roncevrte, - 1225 Homes
Rowlesburg Water Co, - 300 Homes
Rupert, - 420 Homes
Salem, - 900 Homes
Salem Gatewood Psd, - 758 Homes
Shepherdstown Water, - 1078 Homes
Shinnston, - 2300 Homes
Silverton Psd, - 560 Homes
Sisterville Water, - 928 Homes
Sophia, - 1300 Homes
South Jackson Psd, - 1000 Homes
South Putam Psd, - 3000 Homes
Spencer, - 1900 Homes
Springfield, - 330 Homes
Spruce Fork Psd, - 200 Homes
St. Marys, - 1030 Homes
St City, - 750 Homes
Stonewood, - 875 Homes
Summersville, - 1500 Homes
Taylor Co. Psd, - 2800 Homes
Terra Alta, - 400 Homes
Thomas, - 425 Homes
Thomas Water Co., - 249 Homes
Thornton Psd, - 150 Homes
Tomlinson Run Park, - 17 Homes
Tomlinson Run Psd, - 630 Homes
Town of Monongah, - 1393 Homes
Tunnelton Psd, - 358 Homes
Tygart Lack Psd, - 2879 Homes
Tyler Co. Psd, - 2879 Homes
Union, - 375 Homes
Uppertract, - 200 Homes
Valley Good Hope, - 880 Homes
Van Psd, - 800 Homes
Walton Psd, - 600 Homes
Warm Springs Psd, - 1106 Homes
Washington Pike Psd, - 1091 Homes
Wayne, - 1700 Homes
Homes
West Virginia, - Weirton Water Dept., - 9900 Homes
Welch, - 1600 Homes
Wellsburg Water Dept., - 1525 Homes
West Hamlin, - 1600 Homes
West Milford, - 150 Homes
Wheeling, - 14000 Homes
White Sulphur Springs, - 1700 Homes
Whitesville, - 360 Homes
Wilderness Psd, - 1100 Homes
Wiley Ford, - 378 Homes
Williamson, - 400 Homes
Winfield, - 745 Homes
Wynona, - 67 Homes
Homes
Homes
Homes
Wyoming, - 7 Mile W&s, - 35 Homes

Aba, - 79 Homes
Afton, - 525 Homes
Airport Bench, - 25 Homes
Alberts Trl. Ct., - 28 Homes
Albin, - 70 Homes
Alpine, - 200 Homes
American Road, - 65 Homes
Antelope Valley, - 310 Homes
Arapaho Utilities, - 600 Homes
Ardon Subdivision, - 20 Homes
Arvada, - 5 Homes
Aspen W & S, - 500 Homes
B&k Mobile Pk., - 53 Homes
Baggs, - 150 Homes
Bairoi, - 100 Homes
Basin, - 600 Homes
Bedford, - 250 Homes
Big Horn, - 250 Homes
Big Piney, - 200 Homes
Boyson State Park, - 10 Homes
Brent Mosen-Bagga, - 100 Homes
Bridger Valley, - 1385 Homes
Brooks, - 1400 Homes
Buffalo, - 1200 Homes
Burlington, - 70 Homes
Burns, - 96 Homes
Byron, - 200 Homes
Cambria, - 50 Homes
Cathedral Home, - 6 Homes
Wyoming, - Centenia, - 64 Homes
Chugwater, - 100 Homes
Clearmont, - 75 Homes
Cody, - 300 Homes
Cokeville, - 250 Homes
Cottonwood Ct., - 18 Homes
Cowley, - 100 Homes
Crowheart, - 2 Homes
Dayton, - 275 Homes
Dearhaven Trl Ct, - 42 Homes
Deaver, - 70 Homes
Deer Mtn. Ranch Supply, - 37 Homes
Desert Village Mhp, - 234 Homes
Diamondville, - 1200 Homes
Dickinson Tr.ct., - 42 Homes
Douglas, - 2345 Homes
Dubois, - 360 Homes
East Thermopolis, - 100 Homes
Edgerton, - 100 Homes
Elk Basin, - 15 Homes
Elk Mountain, - 255 Homes
Encampment, - 255 Homes
Etna, - 43 Homes
Evanston Plant, - 1800 Homes
Evansville, - 850 Homes
Fairview, - 37 Homes
Farson, - 200 Homes
First Fike Addition, - 70 Homes
Fort Bridger, - 110 Homes
Fort Laramie, - 150 Homes
Frannie, - 100 Homes
Freedom, - 35 Homes
Ft. Washakie, - 200 Homes
Gardens North, - 80 Homes
Glendo, - 110 Homes
Glenrock, - 700 Homes
Grager, - 80 Homes
Granger, - 80 Homes
Green River, - 180 Homes
Greybul, - 1400 Homes
Greybull Heights, - 29 Homes
Grover, - 92 Homes
Guernsey State Park, - 14 Homes
Guersey, - 650 Homes
Hanna, - 1100 Homes
Hartville, - 40 Homes
Wyoming, - Hawk Springs, - 0 Homes
Hells Half Acre, - 5 Homes
Heritage Village, - 550 Homes
Hide-a-way-mobile Park, - 42 Homes
Hillcrest, - 15 Homes
Hudson, - 200 Homes
Hulett, - 170 Homes
Hyattville, - 50 Homes
Indian Paintbrush, - 100 Homes
Jackson, - 30 Homes
Jackson Shop, - 1400 Homes
Jackson/saddle Butte, - 15 Homes
Jamestown, - 170 Homes

Jeffrey City, - 95 Homes
Kaycee, - 125 Homes
Kem-dia-p.w.bd., - 1500 Homes
Kemmerer, - 120 Homes
Labarge, - 175 Homes
Lagrange, - 170 Homes
Lamont, - 2 Homes
Lance Creek, - 25 Homes
Lander, - 2500 Homes
Landfill/sundance, - 500 Homes
Laramie Plant, - 7138 Homes
Linch, - 18 Homes
Lingle, - 240 Homes
Lovel, - 800 Homes
Lucerne Water District, - 70 Homes
Lusk, - 717 Homes
Lyman, - 800 Homes
Manderson, - 64 Homes
Manville, - 60 Homes
Marbleton, - 250 Homes
Meadow Park, - 33 Homes
Means Subdivision, - 30 Homes
Medicine Bow, - 175 Homes
Meeteetse, - 200 Homes
Midwest, - 150 Homes
Mills, - 700 Homes
Monroe Ave. Trl.crt., - 31 Homes
Moon Beam Acres, - 7 Homes
Moorecroft, - 900 Homes
Mountain View, - 400 Homes
Manville, - 50 Homes
Mt. View Acres, - 70 Homes
Mt. View, - 400 Homes
Natrona County Airport, - 15 Homes
Newcastle, - 1300 Homes
Nickelson Farms, - 150 Homes
North Afton, - 100 Homes
North Meeteetse, - 20 Homes
North Riverton, - 60 Homes
Northend Water & Sewer, - 200 Homes
Northern Arapahoe, - 500 Homes
Northfork, - 10 Homes
Northwest Rural Water Dist, - 2000 Homes
Opa, - 40 Homes
Orchard Valley, - 107 Homes
Osmond, - 70 Homes
Pavillion, - 110 Homes
Peoples Imp, - 25 Homes
Pine Bluffs, - 300 Homes
Pine Dale, - 750 Homes
Pine Haven, - 114 Homes
Pioneer Office, - 270 Homes
Point of Rocks, - 65 Homes
Poison Spider, - 200 Homes
Powder River, - 8 Homes
Powel, - 1000 Homes
Rafter Jar, - 300 Homes
Raintree Estates, - 30 Homes
Ranchester, - 300 Homes
Rawlins, - 3500 Homes
Red Fox Park, - 15 Homes
Ridgewater, - 70 Homes
Riverside, - 70 Homes
Riverton Plant, - 3600 Homes
Rock River, - 110 Homes
S Worland, - 150 Homes
S. Cheyenne, - 1500 Homes
S. Thermopolis, - 70 Homes
S. Worland, - 130 Homes
S. End Water, - 35 Homes
S. Worland, - 130 Homes
Saddle Butte, - 15 Homes
Salt Creek, - 170 Homes
Sandy Crossing, - 35 Homes
Saratoga Plant, - 850 Homes
Second Fike Addition, - 50 Homes
Seven Mile, - 30 Homes
Shell Valley West, - 21 Homes
Shop Kirby Operator, - 40 Homes
Shoshone Utilities, - 500 Homes
Shoshoni, - 180 Homes
Shoshoni Utilities, - 500 Homes
Siminole State Park, - 90 Homes
Sinclair, - 150 Homes
Sleepy Hollow, - 340 Homes
Smoot, - 17 Homes
South Cheyenne Water & Sewer, - 1500 Homes

South Laramie, - 500 Homes
South Riverside, - 20 Homes
Spencer Homesites, - 17 Homes
Sunburst, - 150 Homes
Sundance, - 500 Homes
Sundog, - 50 Homes
Sunridge Estate, - 16 Homes
Superior, - 175 Homes
Table Rock, - 40 Homes
Ten Mile Water & Sewer, - 35 Homes
Ten Sleep, - 160 Homes
Teton Village, - 150 Homes
Thayne, - 146 Homes
Thermoplis Town Hal, - 1100 Homes
Torrington, - 2360 Homes
Town Hall Wheatland, - 1700 Homes
Town of Albin, - 77 Homes
Town of Basin, - 600 Homes
Town of Big Piney, - 212 Homes
Town of Burns, - 150 Homes
Town of Douglas, - 2000 Homes
Town of East Thermopolis, - 100 Homes
Town of Encampment, - 125 Homes
Town of Fort Laramie, - 150 Homes
Town of Gerybul, - 1010 Homes
Town of Glendo, - 250 Homes
Town of Granger, - 64 Homes
Town of Guernsey, - 350 Homes
Town of Hanna, - 480 Homes
Town of Jackson Hole, - 2000 Homes
Town of La Grange, - 108 Homes
Town of Labarge, - 187 Homes
Town of Lingle, - 250 Homes
Town of Lovel, - 1000 Homes
Town of Lyman, - 600 Homes
Town of Marbleton, - 275 Homes
Town of Medicine Bow, - 174 Homes
Town of Mountain View, - 100 Homes
Town of Opa, - 38 Homes
Town of Pine Bluffs, - 450 Homes
Town of Pinedale, - 600 Homes
Town of Rawlins, - 2700 Homes
Town of Saratoga, - 8600 Homes
Town of Sinclair, - 100 Homes
Town of Thermopolis, - 1200 Homes
Town of Torrington, - 3000 Homes
Town of Wamsutter, - 100 Homes
Town of Worland, - 1900 Homes
Town of Yoder, - 70 Homes
Upper Little Warm Springs, - 30 Homes
Upton, - 100 Homes
Vision Quest Water, - 70 Homes
Vista West, - 37 Homes
Waltman, - 3 Homes
Wamsutter, - 90 Homes
Wardwel, - 350 Homes
Wasson Tr. Ct., - 16 Homes
Wheatland, - 1700 Homes
White Mountain, - 250 Homes
Willow Creek, - 18 Homes
Winchester Hills, - 80 Homes
Worland, - 3000 Homes
Wright, - 500 Homes
Wy Honor Farm, - 16 Homes
Wy Tech. Inst., - 25 Homes
Y-o-investment, - 59 Homes
Yoder, - 40 Homes

National Mining Association

Richard L. Lawson

November 1, 1995

The Honorable John H. Chafee
Chairman, Senate Environment
and Public Works Committee
410 Dirksen Building
Washington, DC 20510

Dear Chairman Chafee:

The National Mining Association (NMA) was established in early 1995 following the merger of the National Coal Association and the American Mining Congress. Its over 350 members represent the producers of most of America's coal, metals, industrial and agricultural minerals; manufacturers of mining and mineral processing machinery, equipment and supplies; transporters; financial and engineering firms; and other businesses related to coal and hard rock mining. NMA appreciates the opportunity to provide the Committee important information and suggestions relating to the Safe Drinking Water Act and specifically the Safe Drinking Water Act Amendments of 1995. (S. 1316)

It is often thought that the impact, both protective and economic, of the Act touches only public water suppliers and the public they serve. However, the effects of the Act and agency actions taken pursuant to the Act are substantial and far reaching. The impacts can affect small and large businesses and individual property owners. History records, however, that EPA consistently fails to consider significant effects that their actions may have on the business infrastructure of the nation even when the health benefits that may accrue are disproportionately small.

Attached to this letter for inclusion in the legislative hearing record is a copy of the "Comments of the National Mining Association on the Proposed Maximum Contaminant Level (MCL) for Sulfate" submitted by NMA in response to a Notice of Proposed Rulemaking published at 59 Fed. Reg. 65578 (December 20, 1994). (Attachment #1) These comments graphically depict the unacknowledged costs of regulation under the Safe Drinking Water Act.

These comments and the incorporated University of Cincinnati study serve as the basis for NMA's concerns with respect to Section 9 (Sulfate) of S. 1316. Subparagraph (A) suggests that the current proposed MCL for sulfate is not based on scientific evidence of serious health effects. NMA would go on to say that the proposed standard is not based on a credible

quantifiable health threat; is not supported by an adequate scientific database; and is accompanied by an economic analysis that ignores potentially high costs and overstates benefits.

With this in mind, NMA provides the following observations with respect to Section 9 of S. 1316. First, the bill requires that a sulfate standard be set within two years, notwithstanding the extremely inadequate scientific basis for such a standard. See Section 9, Subparagraphs (A) and (B). NMA contends that S.1316 should prohibit EPA from setting a sulfate standard in the absence of stronger scientific evidence.

Second, the bill exempts the setting of a sulfate standard from the risk and cost analysis and "best available, peer-reviewed science" requirements found in other parts of the bill that will apply to any future standards set by EPA if the bill is enacted. Under S. 1316, EPA would have to meet additional risk reduction and cost requirements only if the agency reproposes the sulfate "based on evidence suggesting new or more serious health effects" than have been identified to date. See Section 9, Subparagraph (C).

Third, the bill does not require an EPA disclaimer in any rule establishing a sulfate maximum contaminant level that EPA has not considered the health risk or cost benefit ramifications of using the MCL for any purpose other a public drinking water system tap standard. Such disclaimer is necessary to discourage states from automatically adopting a scientifically indefensible sulfate MCL as a cleanup standard or groundwater protection standard. The disclaimer would provide a basis to require a state to establish independent scientific and economic justification for any standard the state plans to set.

NMA, however, supports the language in Section 9, Subparagraph (D) concerning the "effect on other laws" that prohibits the use of sulfate MCL as a compliance or cleanup standard, an applicable or relevant and appropriate requirement, or for purposes of defining injury to natural resources. This tends to mitigate the detrimental requirement described above that EPA promulgate a sulfate standard.

Although the bill would allow the administrator by rule to adopt the sulfate standard in other federal environmental programs, we think that EPA should have a heavy burden in such rulemaking to justify the enormous economic consequences from and lack of scientific basis for this standard.

NMA maintains that these shortcomings can be rectified and respectfully submits suggested changes to Section 9 (Sulfate) and rationale for those changes. These documents are attached (Attachment #2 and Attachment #3) and NMA asks that they be included in the record of the hearing.

On May 18, 1995, the statutorily created National Drinking Water Advisory Council met in Cincinnati, Ohio. Following that meeting the Council published its recommendations including its recommendation with respect to the Safe Drinking Water Act Reauthorization as follows:

> The Council recommends that the drinking water legislation emphasize and support public health benefits as opposed to quotas on regulated contaminants. This will make it easier for the public to understand and to appreciate the value of safe drinking water standards. (Issue VI, Recommendation 9).

With regard to risk assessments, the Council stated:

> The recommendations support the need to replace the quota-based approach to regulatory contaminants with one is where new contaminants are selected for regulation ased upon evidence of significant risk to public health (Issue IV, Recommendation 4).

By allowing EPA to continue pursuing the currently proposed MCL for sulfate, which Section 9 of S. 1316 does, sound science, solid economic analysis, and the reassured public policy recommendations of the National Drinking Water Advisory Council are being ignored. NMA urges you, Mr. Chairman, and your Committee to revisit Section 9 (Sulfate) of S. 1316 and prohibit the Environmental Protection Agency from promulgating an unjustified sulfate standard.

Sincerely,

Richard L. Lawson

Richard L. Lawson

ATTACHMENT #2

Sulfate

On page 47, after line 11, insert the following new subsection and redesignate subsequent subsections accordingly:

(e) Sulfate. -- Section 1412(b) (42 U.S.C. 300g-1(b)) is amended by adding at the end thereof the following new paragraph

"(12) Sulfate.--

"(A) In General.--In the absence of scientific evidence suggesting new or more serious health effects than available on the date of enactment of this paragraph, ~~[~~the Administrator ~~may make a determination not to~~ SHALL NOT promulgate a national primary drinking water regulation for sulfate. ~~If the Administrator promulgates a national primary drinking water regulation for sulfate,] for purposes of proposal and promulgation of a national primary drinking water regulation for sulfate,~~. IF NEW SCIENTIFIC EVIDENCE SUGGESTS NEW OR MORE SERIOUS HEALTH EFFECTS THAN AVAILABLE ON THE DATE OF THE ENACTMENT OF THIS PARAGRAPH, the Administrator ~~shall~~ MAY MAKE A DETERMINATION TO PROMULGATE A NATIONAL PRIMARY DRINKING WATER REGULATION FOR SULFATE. SUCH REGULATION SHALL include--

"(i) best technology or other means under this subsection; and

("ii) public notification and options for the provision of alternative water to populations at risks as an alternative means for complying with the regulation.

"(B) Schedule.--The regulation referred to in subparagraph (A) shall be proposed not later than 180 days after the date of enactment of this paragraph and promulgated not later than 2 years after such date.

"(C) IF THE ADMINISTRATOR PROMULGATES A NATIONAL PRIMARY DRINKING WATER REGULATION FOR SULFATE THAT ESTABLISHES A MAXIMUM CONTAMINANT LEVEL, THE ADMINISTRATOR SHALL INCLUDE IN THE REGULATION A DISCLAIMER WHICH STATES THAT THE APPROPRIATENESS, FROM EITHER A HEALTH RISK OR COST/BENEFIT VIEWPOINT, OF THE MAXIMUM CONTAMINANT LEVEL AS A CLEANUP STANDARD, A GROUNDWATER PROTECTION STANDARD, OR A STANDARD FOR PURPOSES OF ANY PROVISION OTHER THAN

SUBSECTION (b) OF THIS SECTION WAS NOT CONSIDERED AS PART OF THE PROCESS IN ESTABLISHING THE MAXIMUM CONTAMINANT LEVEL.

"(~~C~~D) Effect on Other Laws.

(i) Notwithstanding provisions of sectionS 107 AND 121(d) of the Comprehensive Environmental Response, Compensation, and Liability Act (42 U.S.C. 9621(d)), ~~or~~ subtitle C or D of the Solid Waste Disposal Act (42 U.S.C. 6921 et. seq.), PART C OF THE SAFE DRINKING WATER ACT (42 U.S.C. §§ 300h TO 300h-7), OR SECTION 311 OF THE CLEAN WATER ACT (33 U.S.C. §1321), no national primary drinking water regulation for sulfate shall be -

"(~~i~~a) USED AS A STANDARD FOR DETERMINING COMPLIANCE WITH ANY PROVISION OF ANY LAW OTHER THAN SUBSECTION (b) OF THIS SECTION (42 U.S.C. § 300g-1(b);

"(~~ii~~b) used as a standard for determining appropriate cleanup levels of whether cleanup should be undertaken with respect to any facility or site; or

"(~~iii~~c) deemed an applicable or relevant and appropriate requirement for any such remediation,

"(d) USED FOR PURPOSES OF DEFINING INJURY TO NATURAL RESOURCES

unless the Administrator, by rule and after notice and opportunity for public comment, determines that the regulation is appropriate for such use.

(ii) This subparagraph[1] shall not be interpreted, construed or applied to affect any requirement of State law, including the applicability of any State standard similar to the regulation published under this section, as a standard for cleanup actions, COMPLIANCE, OR NATURAL RESOURCES DAMAGES taken pursuant to such laws."

---

[1] In the previous draft of NMA's proposed changes, the word "subparagraph" was erroneously changed to "subsection." This draft corrects that error and returns to the language contained in the original proposal.

ATTACHMENT #3

Rationale for Suggested National Mining Association Changes to Proposed SDWA Amendment on Sulfate

The National Mining Association ("NMA") has reviewed the draft SDWA sulfate amendment (adding a new 42 U.S.C. § 300g-1(b)(12)) and has proposed modifications to that amendment. A red-lined version of NMA's proposed changes is attached. The rationale for NMA's proposed changes is set forth below.

1. Changes to Subparagraph A: This change would prohibit promulgation of a national primary drinking water regulation for sulfate unless evidence of new or more serious health effects attributable to sulfate is discovered. (The current proposal merely states that EPA "may" determine not to promulgate a drinking water standard for sulfate in the absence of new scientific evidence.) The only health effect allegedly attributable to sulfate is short-term diarrhea in some individuals exposed to high sulfate drinking water for the first time (particularly travelers and infants). Moreover, as described further on pages 13-35 of NMA's comments on the proposed sulfate MCL, the entire scientific database currently relied on by EPA to demonstrate that sulfate causes this effect consists of two older (pre-1970) reports of questionable validity. Given the relatively minor (and short term) nature of the presumed adverse health effects attributable to sulfate, the limited database supporting the link between sulfate and this effect, and the potentially enormous costs associated with adoption of a sulfate MCL (discussed on pages 35-41 of NMA's comments on the proposed sulfate MCL), the SDWA should be amended to preclude adoption of a sulfate drinking water standard unless new evidence suggests that sulfate poses a greater health risk than is currently believed.

2. Addition of New Subparagraph C: If a sulfate MCL ultimately is set, this new subparagraph would require EPA to include a disclaimer stating that the Agency, in setting the MCL, did not consider the appropriateness of the MCL as an ambient groundwater standard, a cleanup standard, or any other legally enforceable standard. Such a disclaimer should be included because MCLs, once adopted under the SDWA, exert a great deal of influence in numerous other federal and state programs (as discussed on pages 35-41 of NMA's comments on the proposed sulfate MCL). In some cases, the agencies implementing these programs have discretion in determining whether or not to utilize the MCL in the programs (e.g., states in deciding whether to adopt a MCL as an ambient groundwater standard). Including a disclaimer in the sulfate MCL would encourage the regulatory agencies implementing these types of programs to exercise their discretion in favor of not using the MCL for any purpose other than that for which it was intended (i.e., as a tap standard for water provided after treatment by public water systems).

The inclusion of a disclaimer is discussed further on pages 49-50 of NMA's comments on the proposed sulfate MCL.

3. Changes to Proposed Subparagraph C (redesignated as Subparagraph D): NMA supports the concepts expressed in this subparagraph, but believes that the existing language fails to recognize that adoption of a sulfate MCL will have impacts on programs other than those

currently identified (many of which are identified on pages 35-41 of NMA's comments on the proposed sulfate MCL).

NMA's proposed changes state that a sulfate standard would not be used as an enforceable standard in any of the following additional programs: (1) natural resource damage assessments under CERCLA (see 42 U.S.C. §§ 9607(a)(4)(C) & 9607(f)), since exceedances of a sulfate MCL could be used to define "injury" to natural resources; (2) natural resource damage assessments under the Clean Water Act (33 U.S.C. §§ 1321(c)(1)(A)(iv), 1321(d)(2)(M) & 1321(f)(4)); and (3) Part C of the SDWA itself, which includes the underground injection control program (rules implementing this program prohibit any injection activity that would result in migration of fluid exceeding any MCL into an underground source of drinking water, see 40 C.F.R. § 144.12). NMA's proposed changes identify these specific statutory sections, and also include narrative statements (new subparagraphs D(i)(a) & D(1)(d)) specifying that a sulfate MCL shall not be used as a means of assessing compliance with any requirement of any law (other than a requirement imposed by § 1412(b) itself).

The final proposed NMA change is to what would be redesignated as subparagraph D(ii). The change is simply intended to conform this provision to the other proposed changes discussed above. NMA recognizes that there exist state law provisions using MCLs in a variety of contexts other than cleanup, and that nothing done in the SDWA can affect these state law provisions. (The existence of these sort of provisions is one reason why a disclaimer along the lines outlined above is needed.) The changes proposed to this portion of the bill merely reflect this reality.

COMMENTS OF THE NATIONAL MINING ASSOCIATION ON THE PROPOSED MAXIMUM CONTAMINANT LEVEL FOR SULFATE

ATTACHMENT #1

COMMENTS OF THE
NATIONAL MINING ASSOCIATION
ON THE PROPOSED
MAXIMUM CONTAMINANT LEVEL
FOR SULFATE

59 Fed. Reg. 65578 (December 20, 1994)

March 21, 1995

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APPENDICES

A. Declaration of Robert Perciasepe in Miller v. Browner, No. 89-6328-HO (D. Or.) (Jan. 9, 1995)

B. Letter from Governor George S. Mickelson to Senators Daschle and Pressler and Representative Johnson (May 11, 1992)

C. "A Review of the U.S. EPA's Proposal to Set an MCL for Sulfates in Drinking Water," prepared by the University of Cincinnati and Dames & Moore (March, 1995)

D. Letter from Max Dodson, Director of Water Management Division, Region 8, to James Elder, Director of the Office of Ground Water and Drinking Water (April 1, 1994)

E. David E.C. Cole, "Infantile Gastroenteritis Due to High-Sulfate Water: A Critical Assessment" (August 14, 1992)

F. Statement of Richard R. Monson, M.D., SC.D. (October 17, 1990) (originally submitted as part of comments of Asarco, Inc. on 1990 proposal to set a sulfate MCL).

G. Science Advisory Board, Metals Subcommittee, letter to William K. Reilly, "Science Advisory's Board's Review of the Sulfate Health Criteria Document" (July 17, 1989)

COMMENTS OF THE NATIONAL MINING ASSOCIATION ON EPA's PROPOSED MAXIMUM CONTAMINANT LEVEL FOR SULFATE, 59 Fed. Reg. 65578 (December 20, 1994)

The National Mining Association ("NMA"), was established on February 13, 1995 following the merger of the National Coal Association and the American Mining Congress. Its 381 members represent the producers of most of America's coal, metals, industrial and agricultural minerals; manufacturers of mining and mineral processing machinery, equipment and supplies; transporters; financial and engineering firms; and other businesses related to coal and hardrock mining.

NMA is vitally interested in the Environmental Protection Agency ("EPA" or "the Agency") proposal to establish a maximum contaminant level goal ("MCLG") and maximum contaminant level ("MCL") of 500 mg/l for sulfate because of the potentially significant adverse impact adoption of this overly conservative standard could have on the mining industry. Moreover, NMA as a general matter has an interest in ensuring that environmental regulations, including drinking water standards, are realistic, are developed to protect against real threats to human health or the environment, and are developed and implemented in a scientifically sound and cost effective manner.

EXECUTIVE SUMMARY

EPA's proposal to establish a sulfate MCLG and MCL at a level of 500 mg/l is based on the premise that initial exposure to high sulfate drinking water can cause temporary diarrhea in some individuals (primarily infants and travelers). EPA concedes that any diarrhea caused by high sulfate drinking water disappears after a short time (assumed by EPA to be two weeks). There is no evidence of chronic health effects from the ingestion of sulfate. Sulfate is not a systemic toxicant and does not cause any carcinogenic, mutagenic or teratogenic effects.

The proposed sulfate standard is fundamentally flawed because it is: (1) not based on a credible, quantifiable health threat; (2) not supported by an adequate scientific database and, in fact, is contrary to the most recent, most reliable scientific information available (generated in studies commissioned by EPA itself); (3) accompanied by an economic analysis that ignores potentially huge costs that would be incurred as a result adopting the standard, while at the same time overstating the benefits that would be realized from adopting the standard; and (4) not necessary to comply with the mandates of the Safe Drinking Water Act ("SDWA") or the Oregon consent decree recently agreed to by EPA.

The scientific basis for establishing a MCL for sulfate has been in question for over a decade. In 1985, EPA concluded that it lacked adequate data on which to establish a MCLG. The agency publicly reiterated the same conclusion in 1987. In 1989, a panel of EPA's Science Advisory Board concluded that inadequate data existed to set a MCLG. In 1990, EPA proposed a sulfate MCL on the basis of the same data that had been called into question by the Science Advisory Board panel (and which in 1985 EPA had concluded was insufficient

to establish a standard). The standard proposed in 1990 was seriously challenged in public comments, to which EPA never fully responded. In 1992, a panel of independent experts consulted by EPA noted additional deficiencies in the existing data base and recommended additional studies; later that year EPA publicly announced deferral of its 1990 proposed standard.

Notwithstanding this history, EPA now proposes a sulfate MCL based on precisely the same data that existed in 1985 and that have been repeatedly deemed inadequate to support establishment of a standard. In light of this history and the absence of an adequate scientific basis for the proposed MCL, NMA strongly urges EPA not to set a MCL for sulfate. A sulfate drinking water standard should be set only if new, scientifically sound data are developed justifying such a standard.

Some of the fundamental flaws in EPA's current proposal are as follows:

- Variables other than the level of sulfate in drinking water exert a strong influence on whether ingestion of that water could cause diarrhea. These variables (some of which are completely unrelated to water quality) include the overall chemistry of the water (there is evidence that the presence of elements such as magnesium, calcium and sodium, and the interaction of those elements with sulfate, has a more direct correlation with diarrhea than simply the level of sulfate); the presence or absence of food in the stomach; diet; the presence of metals and organic compounds in the intestine; and stress. There has as yet been little or no attempt to

analyze and isolate the effect of these variables and their interaction with high sulfate water.

- The two studies primarily relied on by EPA to justify the proposed standard (one a 1951 survey, the other a 1968 case study of three infants in Canada) simply do not provide an adequate scientific basis to support the standard. These are the same studies that previously were deemed inadequate to support a standard, and which EPA's own Region 8 concluded (in 1994) provided "no credible quantitative information supporting the 500 mg/l standard." EPA's proposal notes some of the flaws and inadequacies of these studies, but the Agency nevertheless still relies on them as the sole scientific basis for the proposed standard.
- Recent studies commissioned by EPA, although not yet published, strongly suggest that drinking water can contain levels of sulfate significantly higher than the proposed 500 mg/l standard without causing any adverse health effect.
- EPA fails to consider the impact that adopting a sulfate MCL of 500 mg/l will have under other federal and state environmental programs. MCLGs and/or MCLs automatically become enforceable cleanup and/or performance standards under numerous other federal or state programs. These programs include CERCLA, natural resource damage assessments, the SDWA underground injection control program, and various state groundwater standards and groundwater permitting programs. Adoption

of a sulfate MCL ultimately also could have an impact on a number of other programs (including several RCRA programs), and also could be used as a basis for a variety of private litigation (e.g., toxic tort, trespass, nuisance, negligence, etc.).

- Increased remediation costs triggered by adoption of a sulfate MCL at 500 mg/l could range from $600 million to $12 billion annually, depending on the method of estimation used. EPA has made absolutely no effort to quantify these costs.
- EPA's failure to consider costs directly associated with adoption of the sulfate MCL violates the Regulatory Program of the United States Government and Executive Order 12866. Even if the SDWA does not specifically require EPA to consider these costs in adopting MCLs, such costs must be considered pursuant to these other authorities.
- EPA's decision to propose a sulfate MCL, and the timing of its proposal, is being driven entirely by what it believes to be its duties under the Safe Drinking Water Act and a consent decree signed by EPA to settle a citizen suit brought in Oregon, and not by a belief that sulfate in drinking water poses a significant health threat. However, EPA is not required by either the SDWA or the Oregon consent decree to adopt a sulfate MCL. EPA could determine not to adopt any primary drinking water regulation until it has adequate scientific evidence on which to base a standard, or it could adopt a treatment technique in lieu of a MCL.

In summary, EPA has failed to develop the scientific or economic database necessary to support adoption of a sulfate MCLG and MCL. Given that adoption of a sulfate MCL will impose significant costs but provide limited health benefits (presumed avoidance of a relatively small number of cases of temporary diarrhea), EPA should not proceed with adoption of a sulfate standard at this time.

COMMENTS

I. BACKGROUND

A. Statutory background

The Safe Drinking Water Act ("SDWA"), 42 U.S.C. §§ 300f to 300j-25, authorizes the Environmental Protection Agency ("EPA") to set National Primary Drinking Water Regulations ("NPDWRs") for contaminants in drinking water in public water systems. A NPDWR may consist of either a maximum contaminant level ("MCL") (the maximum permissible level of a contaminant in water which is delivered to users of public water systems) or, if it is not economically or technologically feasible to ascertain the level of a contaminant, a treatment technique to reduce the level of such contaminant. See 42 U.S.C § 300f(1).

The 1986 amendments to the SDWA identified 83 specific contaminants for which EPA was to publish maximum contaminant level goals ("MCLGs") and promulgate NPDWRs by June 19, 1989. See 42 U.S.C. § 300g-1(b)(1). The MCLG is the level at which no known or anticipated adverse effects on the health of persons occur, allowing for an adequate margin of safety. See 42 U.S.C. § 300g-1(b)(4). When the NPDWR for a contaminant includes a MCL (as opposed to a treatment technique), the MCL should be set as close to the MCLG as

is "feasible." See id. "Feasible" means "feasible with the use of the best technology, treatment techniques and other means which the Administrator finds, after examination for efficacy under field conditions and not solely under laboratory conditions, are available (taking cost into consideration)." See 42 U.S.C. § 300g-1(b)(5) (emphasis added).

The 83 contaminants for which NPDWRs were to be set by 1989 are identified in notices published by EPA at 47 Fed. Reg. 9350 (March 4, 1982) and 48 Fed. Reg. 45502 (October 5, 1983). Sulfate is included among these 83 contaminants. Congress gave EPA an opportunity make substitutions for seven chemicals on the list in order to regulate contaminants that in EPA's judgment presented a grater health risk in drinking water. EPA has used all seven available substitutions, but sulfate was not one of the substitutions. See 53 Fed. Reg. 1892 (January 22, 1988).

B. Regulatory background

EPA has been considering possible adoption of a sulfate MCL for almost a decade, but heretofore has deferred action because of a lack of sound scientific data. EPA specifically concluded in 1985 and 1987 that it lacked data sufficient to set a sulfate MCL. See 50 Fed. Reg. 46979-46980 (November 13, 1985); 52 Fed. Reg. 25726 (July 8, 1987). In 1989, the Metals Subcommittee of EPA's Science Advisory Board concluded that the existing data was insufficient to set a Drinking Water Equivalent Level, determination of which is a critical first step in setting a MCLG. See Appendix G.[1]

[1] These prior regulatory determinations are discussed further below in Section II.D of these comments.

In 1990, EPA proposed a MCLG and MCL (at levels of 400 mg/l or 500 mg/l) for sulfate, as part of the broader Phase V rulemaking containing proposed standards for a total of 24 contaminants (both inorganic and organic). See 55 Fed. Reg. 30371 (July 25, 1990). EPA's proposal ignored the conclusions it had published in 1985 and 1987 that existing data were insufficient to support a sulfate MCLG or MCL. In response to comments received during this rulemaking, EPA decided to defer action on sulfate "[b]ecause of the high cost of regulating sulfate, its relatively low risk, and its impact primarily on the transient consumer." See 57 Fed. Reg. 31776, 31815 (July 17, 1992). EPA indicated at that time that it intended to investigate "whether new regulatory approaches need to be established for regulating a contaminant whose health effect is confined largely to transient populations." See id.

One of the reasons EPA decided to defer sulfate from the final Phase V regulations was because of the recommendations made by an expert panel it convened in May, 1992 to address the sulfate question. That panel recommended that additional studies be conducted before establishing a sulfate MCL. Since that date, EPA has helped to fund studies conducted at the University of North Carolina School of Medicine and the North Carolina State University Department of Animal Science on humans and piglets (which are assumed to be adequate surrogates for human infants). The results of these studies are undergoing internal and external peer review and have not yet been formally published.[2] EPA apparently has not taken into account the results of these studies in developing the proposed sulfate standard. The only

[2] These studies are discussed further below in Section II.C and Appendix C of these comments.

EPA reference to the new studies in the preamble is a statement that the results are "currently under review." See 59 Fed. Reg. at 65581.

Failure to consider the results of the new studies means that EPA's December 20, 1994 proposal to establish a 500 mg/l MCL for sulfate is based on precisely the same scientific database as the 1990 proposal, which was ultimately withdrawn while EPA considered "new regulatory approaches." These "new regulatory approaches" consist of methods to implement the 500 mg/l MCL (e.g., provision of alternative water supplies, notification to customers, etc.), rather than an evaluation of whether a sulfate MCL is appropriate at all or how (and based upon what data) that MCL is to be developed.[3]

The timing of the current proposal to establish a sulfate MCL has been driven largely by a consent decree entered in the case of Miller v. Browner, Civ. No. 89-6328-HO (D. Or., amended consent order dated February 22, 1994). Pursuant to the terms of that settlement, EPA agreed to "propose a regulatory decision" for sulfate by November 30, 1994, and to take "final action with respect to the proposed regulatory decision for sulfate" by May 31, 1996. Significantly, the settlement agreement does not require EPA to set a MCL for sulfate, but only requires the agency to make a "regulatory decision" regarding sulfate. The consent decree language appears to allow EPA sufficient discretion to decide not to set a MCL for sulfate, or to establish a treatment technique (in lieu of a MCL) should EPA decide that a NPDWR for sulfate is appropriate.

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[3] A non-enforceable secondary drinking water regulation (referred to as a secondary maximum contaminant level, or SMCL), establishing a 250 mg/l level for sulfates based on aesthetic considerations, currently exists and would not be impacted by the proposed establishment of a MCL. See 40 C.F.R. § 143.3.

EPA recently filed a request with the court that issued the consent decree to be allowed to suspend work on the final sulfate rule in order to reassess the priorities of the drinking water program, determining which contaminants present the greatest health threat to drinking water users and thus are most immediately worthy of regulation under the SDWA. See Declaration of Robert Perciasepe (January 9, 1995) (the "Perciasepe Declaration") (copy included as Appendix A).

C. The sulfate anion

Sulfate is a divalent anion (SO_4^{-2}) that is found in a variety of inorganic compounds and salts formed with metal cations. Sulfate occurs naturally in soil sediments and rocks. Moreover, given that sulfate salts with lower molecular weight alkali metals (e.g., sodium, potassium and magnesium) are quite water soluble, sulfate often occurs naturally in groundwater. In some areas of the country, naturally-occurring sulfate levels in groundwater exceed EPA's proposed 500 mg/l standard. For example, South Dakota Governor George Mickelson wrote his congressional delegation in 1992 explaining that sulfate occurs naturally in many of the groundwater supplies used as drinking water in South Dakota and that 30% to 40% of South Dakota's water systems would be out of compliance with the standard proposed in 1990 (400/500 mg/l). See Letter from Governor George S. Mickelson to Senators Daschle and Pressler and Representative Johnson (May 11, 1992), at p. 1 (copy included as Appendix B). EPA recognizes that sulfates are "abundant" in the environment and "often" are found in natural groundwater. See Final Drinking Water Criteria Document for Sulfate, at p. II-1 (January 1992) (hereinafter referred to as the "Sulfate Criteria Document").

In addition, sulfate is used in a variety of human activities. For example, sulfate is used as a reagent in manufacturing activities and as a soil additive to promote vegetative growth. In this latter context, use of sulfate as an additive for alkaline soils is a widespread practice. One method of application, done both commercially and in private gardening, is to spread sulfate pellets on the ground to promote slow release of sulfate to counter alkalinity. In some mining areas, sulfate is added to waste rock material that is principally limestone in order to promote vegetation that would not grow without this soil additive. It often is extremely difficult to distinguish between naturally occurring and anthropogenic sulfate in groundwater.

D. Presumed health effects of sulfate

Unlike most other contaminants for which MCLs have been set, sulfate does not pose a health threat based on chronic exposure. See 59 Fed. Reg. at 65581 ("chronic exposure to sulfate is not harmful to health"). There is absolutely no evidence that sulfate is a systemic toxicant or has any carcinogenic, mutagenic or teratogenic effects. A critical first step in EPA's protocol for establishing a MCLG for non-carcinogenic chemicals is setting a drinking water equivalent level ("DWEL") for the subject contaminant based on acute or chronic health effects. No DWEL can be established based on chronic effects of sulfate because there is no evidence that ingestion of sulfate causes any chronic health effects. Moreover, as discussed later in these comments, there is insufficient data to set a reasonable DWEL based on acute effects from sulfate.

Sulfate is believed to have acute, short-term cathartic effects ranging from soft stools to diarrhea. It is believed that sulfate salts are poorly absorbed in the intestinal tract. These salts may have an osmotic effect, causing water to be retained in the intestinal tract in

greater quantities than normal, which can in turn lead to diarrhea. EPA believes that humans can acclimate to high sulfate water in a relatively short period (EPA assumes two weeks in the proposed regulation, see 59 Fed. Reg. at 65582). Once acclimated, individuals can continue to ingest high sulfate water with no ill effects whatsoever.

EPA's primary basis for proposing the sulfate MCL is the possible laxative effect that infants and travelers may experience upon initial exposure to high sulfate water. EPA specifically is concerned that increased absorption of water in the intestine could cause dehydration and electrolyte imbalance, particularly in infants, which could be "fatal if untreated." See 59 Fed. Reg. at 65581. (In its 1990 sulfate proposal, however, EPA conceded that infant fatalities due to dehydration are unlikely to occur in the United States, which is of course the only country where EPA's proposed sulfate MCL would have legal force. See 55 Fed. Reg. at 30383.) The particular concern with infants is that they consume more water per body weight than do adults, thus potentially making infants more susceptible to the effects of sulfate in drinking water. See id. Even in adults, EPA believes the "individual is subject to debilitation during the acclimation period." See 59 Fed. Reg. at 65583.

EPA relies on a very limited scientific database in proposing the 500 mg/l MCLG for sulfate. There are essentially only two studies that EPA cites in support of its proposal: (1) a 1968 case study of three infants in Canada who were given baby formula prepared with water containing levels of sulfate between 630 and 1150 mg/l; and (2) results of a 1951 survey of North Dakota residents (which were reinterpreted by a different party in 1952). See 59 Fed. Reg. at 65583. As discussed further below, these studies suffer from significant flaws and do not support a standard of 500 mg/l. Additional studies mentioned by EPA and also discussed

further below (e.g., the World Health Organization sulfate standard) also do not support a 500 mg/l MCL for sulfate.

II. EPA HAS NOT DEVELOPED A SUFFICIENT SCIENTIFIC DATABASE TO DEVELOP A MCLG FOR SULFATE

In the four years since EPA originally proposed a sulfate MCL, the Agency has done little to resolve the outstanding scientific issues relating to establishment of a MCL for sulfate. The mechanism by which sulfate is believed to cause diarrhea, and by which humans acclimate to high sulfate drinking water, has not been studied in sufficient detail to allow development of a valid exposure model. In addition, numerous factors (both physiological factors and characteristics of the drinking water itself) not addressed by EPA in the proposal or the rulemaking docket could significantly affect whether (and to what extent) high sulfate water has an effect on humans ingesting that water.

Those studies on which EPA relies to support its standard are seriously flawed, which the Agency to some extent recognizes. See 59 Fed. Reg. at 65582. Moreover, the results of the recent studies that EPA has commissioned in North Carolina, although not conclusive, clearly support a much higher MCL than that proposed by EPA.

In light of these gaps in the exposure model and the scientific database, it would be inappropriate to establish a MCLG or MCL at this time. In establishing MCLs under the SDWA, Congress clearly intended that EPA rely on sound scientific data before establishing enforceable standards. Establishing a sulfate MCL at 500 mg/l where there is little, if any, reliable data supporting such a standard and where more recent studies (commissioned by EPA itself) suggest that a much higher standard is appropriate, would run counter to this implicit

requirement to utilize sound science and would constitute an arbitrary and capricious action under the Administrative Procedure Act.

A. The precise mechanism by which sulfate allegedly causes diarrhea, as well as the impact of other physiological factors, is not well understood

The general principle that very high levels of sulfate can have a laxative effect is generally accepted. However, precisely how this effect is caused, and what additional variables determine whether and to what extent ingestion of high sulfate water will impact an individual, are not well documented in the literature or EPA's proposal. EPA makes a number of assumptions regarding critical issues that may not be accurate or may not be based on an evaluation of all relevant factors. If any of these assumptions are incorrect, EPA's sulfate exposure model (and its proposed MCLG) is seriously flawed.[4]

Some of the key areas of uncertainty in the sulfate exposure model are as follows:

1. Overall water chemistry may be more important than sulfate levels

In the context of diarrhea purportedly caused by ingestion of high sulfate drinking water, it is not clear whether the diarrhea is solely the result of sulfate ions or instead is dependent on the interaction of other ions present in the water (e.g., sodium, magnesium and calcium). There is evidence that total osmolarity has a more direct correlation to potential diarrhea than does sulfate content alone. For example, EPA's 1992 workshop convened to

[4] EPA appears to believe that the mechanism by which sulfate causes diarrhea is well understood and does not require further research. After noting that some sulfate salts are used as laxative agents, EPA states in the preamble to the proposed rule: "Their mechanism of action is known, and there is apparently little interest in the medical community in additional research on the subject." See 59 Fed. Reg. at 65582. Although this statement may be accurate with respect to the usage of large, single doses of sulfate salts to produce a desired laxative effect, it is inaccurate with respect to the overall issue of sulfate in drinking water and the possible health effects caused by high sulfate drinking water.

discuss sulfates (the "1992 Workshop") noted that calcium sulfate is less soluble (and less cathartic) than magnesium sulfate. Thus, the presence of other ions such as calcium or magnesium, the level at which those ions are present, and the interaction of these ions with sulfate, may be more important in determining whether drinking water will have a health effect than simply the level of sulfate alone. If this is the case, regulating sulfate in drinking water at any particular level will not necessarily protect against any laxative effects of drinking water (or at best will have a very poor correlation to protection against laxative effects).

The studies relied on by EPA in proposing the MCLG at a level of 500 mg/l do not address in any fashion the presence of other ions in drinking water, and do not even recognize total osmolarity as an issue. The recent North Carolina studies commissioned by EPA apparently give some weight to this issue, but even those studies do not analyze the osmolarity of the subjects' stool. Such an analysis would be the best way to determine the cause of diarrhea.

Attached as Appendix C to these comments is a study commissioned by the American Mining Congress entitled "A Review of the U.S. EPA's Proposal to Set an MCL for Sulfates in Drinking Water," prepared by the University of Cincinnati and Dames & Moore. This report addresses many of the technical and economic components of the proposed EPA rule. A discussion of the osmolarity issue can be found in Appendix C. A brief discussion of the importance of overall water chemistry in producing potential laxative effects also is found in Appendix F (statement of Richard Monson, Ph.D., SC.D. on EPA's 1990 sulfate MCL proposal).

2. **EPA has not adequately explained how and why acclimation to high sulfate water occurs**

EPA's proposal, as well as some of the sparse literature that exists on sulfate health effects, presumes that humans can acclimate to sulfate in drinking water so that any adverse health effects are experienced only in the short term. In the proposal, EPA states: "Acclimation to sulfate is assumed due to the fact that people living in regions with high sulfate drinking water seem to have no adverse effect, whereas newcomers drinking that region's water will initially experience the laxative effect." See 59 Fed. Reg. at 65582 (emphasis added.) EPA has offered nothing but anecdotal data in support of its assertion that ingestion of sulfate has an adverse effect on newcomers first exposed to high sulfate drinking water. Moreover, there is no physiological explanation offered in the proposal or the literature as to precisely how this acclimation occurs (other than a statement in the preamble to the proposed rule that acclimation is tied to cell replacement in the intestine).

Significant populations in the United States and around the world regularly consume high sulfate drinking water without adverse effects. The State of South Dakota, in oral and written testimony presented at the February 2, 1995 hearing on the proposed sulfate MCL, indicated that it had contacted physicians in areas with high sulfate drinking water, specifically to inquire about possible adverse effects on infants, and had found no evidence of any such impacts. This strongly suggests that EPA's assumptions that individuals (particularly infants) first exposed to high sulfate water will experience diarrhea may be incorrect (or, at a minimum, overbroad).

Even if EPA's assumptions about acclimation are correct, EPA cites no data to support its conclusions regarding the length of time needed to acclimate to high sulfate water.

EPA assumes that two weeks are needed for acclimation to occur based on the mucosal cell turnover rate in the intestines. See 59 Fed. Reg. at 65582. As noted above, however, there is no explanation provided in the proposal as to why cell replacement is needed for acclimation to occur, meaning that any estimate of the time needed for acclimation to occur that is based on the cell replacement theory a;so is suspect. EPA's 1992 Workshop noted that the assumption that acclimation occurs within roughly 10 days (and in a range of 7-14 days generally) is somewhat arbitrary and exists without supportive data. In the absence of data supporting its conclusion, EPA's assertion that acclimation occurs in two weeks is arbitrary and unreasonable. It is entirely possible that acclimation, if it occurs at all, occurs in a much shorter time than assumed by EPA.

A better understanding of how and why acclimation occurs, and how long it reasonably can be expected to take, is critical in order for EPA to establish a reasonable, scientifically defensible MCLG for sulfate.[5] The issue of acclimation to high sulfate water is discussed further in Appendix C.

3. Other variables impact whether high sulfate water causes diarrhea

The basis for EPA's model of the adverse health effects sulfate has on humans is the assumption that sulfate is poorly absorbed in the intestine. However, little attention has been given to external factors that could influence the absorption rate of sulfate in the human intestine. For example, as noted by EPA's 1992 Workshop, the presence or absence of food in the stomach influences sulfate absorption, as does the presence of metals and organic

[5] The assumed acclimation period also is relevant in assessing the costs and benefits of the proposed standard.

compounds. The 1992 Workshop also noted that diet can have an impact on stool consistency, meaning that the type of food (as well as the presence or absence of food) in the intestinal tract could be relevant on the issue of sulfate absorption and resulting diarrhea. See also Appendix C. Moreover, in assessing the impacts of ingesting high sulfate water, it appears that there is a high degree of variability among individuals. See Appendix C. This suggests that there are other, as yet unexplained, physiological factors that impact whether diarrhea occurs upon exposure to high sulfate water. Finally, it has been suggested that emotional factors (e.g., stress) can result in physical manifestations that can help cause diarrhea.

All of these factors are variables that should be examined in any study assessing the impact of sulfate, but none have been examined in detail in the studies performed to date. The presence of variables such as those identified above (and others undoubtedly as yet unidentified) make it difficult to predict whether EPA's proposed sulfate MCLG, designed to prevent diarrhea, will be successful in achieving that goal.

4. It has not been adequately demonstrated that infants are a sensitive subpopulation

EPA's primary concern in proposing the sulfate MCL is the potential for health impacts on infants. This concern, in turn, is based on two foundations: (1) an observation that infants consume more water per body mass than do adults, and thus might be more susceptible to diarrhea induced by sulfates in drinking water, with the possibility of dehydration and electrolyte imbalance; and (2) a 1968 clinical study of three infants in Canada, the Chien study, discussed below.

It is undoubtedly true that infants consume more water per body mass than do adults. However, there may be compensating factors that actually make infants and young

people more adaptable in handling high sulfate drinking water. For example, it is generally accepted that inorganic elements are absorbed with greater efficiency by the young than by adults of all species. In humans, enhanced absorption appears to last from parturition to puberty. See Appendix C. Although this relationship has not been studied specifically with respect to sulfate in human infants, there is no reason to believe that sulfate would be absorbed with lesser efficiency than other inorganic elements that have been studied. Increased absorption of sulfate would reduce the likelihood of experiencing a laxative effect. EPA has not considered this issue in its analysis of the potential effect of high sulfate drinking water on infants.

Furthermore, if EPA is correct in assuming that acclimation is based on replacement of cells in the intestine, infants should acclimate faster than adults. Infants replace cells faster than adults as a general matter, and there is no basis for believing that this is not true of cells in the intestines. See Appendix C.

Moreover, as a practical matter (and as noted above), if EPA's theory about the susceptibility of infants is correct, it would seem logical to expect there to be reports of high incidences of diarrhea among infants born in areas with high sulfate drinking water. NMA is not aware of any such reports, nor has EPA cited any such evidence (other than the Chien study, which dealt with three infants in Canada). It also would seem logical to expect that there would be numerous reported cases, in areas of high sulfate drinking water, of what EPA states is the greatest risk to infants -- "dehydration and electrolyte imbalance that may result from diarrhea ... [which] can be fatal if untreated." NMA is not aware of, and EPA has not cited, any evidence of such results due to infant ingestion of sulfate in drinking water.

These factors suggest that EPA's assumption that infants are a sensitive subgroup may need to be reevaluated and possibly refined. The presumption that infants are particularly sensitive to high sulfate drinking water is simply not supported by any scientific data or evidence. Although there may be some basis for EPA's assumption concerning increased sensitivity in infants (e.g., the higher rate of water consumption per body mass), other physiological factors (e.g., more efficient absorption of inorganic substances, faster rate of cell replacement), combined with the absence of documented health problems in the United States, suggest that infants as a group may not be as sensitive as EPA believes.

The State of South Dakota, in conjunction with the Center for Disease Control, currently is conducting a study in South Dakota that will focus on ingestion of high sulfate water by human infants under 6 months of age. The results of this study may help to clarify whether and to what extent infants are more sensitive than other segments of the population to high sulfate drinking water. At a minimum, EPA should delay promulgation of any MCL until the results of this study have been released and have undergone peer review.

5. The link between sulfate and dehydration requires further study

EPA states in the preamble to the proposed sulfate MCL that sulfate retains water in the human body, meaning that increased ingestion of sulfate in drinking water can lead to dehydration. See 59 Fed. Reg. at 65581. However, it is questionable whether ingestion of high sulfate drinking water will cause significant dehydration. EPA Region 8 recently concluded that there is insufficient retention of water in humans at 1000 mg/l sulfate (twice the proposed standard) to account for significant dehydration in adults or children. See letter from Max Dodson, Director of Water Management Division, Region 8, to James Elder, Director of the

Office of Ground Water and Drinking Water (April 1, 1994) (copy attached as Appendix D). Responding to statements in the sulfate criteria document (statements that are repeated in the preamble to the current proposal) that sulfate retains water and causes dehydration, Region 8 states: "we think it is incorrect to make statements about sulfate potentially causing significant dehydration." See Appendix D. Region 8 provides calculations about the amount of water likely to be retained by adults and infants ingesting water containing 1000 mg/l sulfate, and concludes that the increases in fecal bulk that would likely result from ingestion of high sulfate water "may be mildly uncomfortable and alarming to the adult or the parent of the child, [but] THIS IS NOT A PATHOLOGICAL CONDITION." See Appendix D (emphasis in original). Thus, ingestion of water containing sulfates at a level twice that of the proposed MCL may not result in the adverse health effect (dehydration) that EPA assumes it needs a sulfate MCL of 500 mg/l to prevent.

Even if ingestion of high sulfate drinking water could lead to dehydration, the cause and effect relationship is not so simple as EPA seems to believe. First, EPA appears to assume that the risk of dehydration stems in part from the fact that individuals will consume less water than normal because high sulfate water may have a poor taste. See Sulfate Criteria Document, at pp. I-2, V-4, and VII-1. EPA apparently has not considered (or has discounted without explanation) the possibility that persons suffering from diarrhea will shift to consumption of bottled water, thus keeping the individual's water intake up and simultaneously reducing exposure to high sulfate water. This possibility should be considered in assessing the realistic chances of dehydration occurring.

Second, there are numerous common-sense steps, short of seeking medical attention, that can be and typically are taken before dehydration will occur in an individual. Such steps include changes in diet; use of over-the-counter medication; and (as noted above) use of bottled water, whether for direct consumption or for preparation of an infants's formula. Thus, there is no need to establish a sulfate MCLG at an artificially low level to protect against dehydration when there are numerous steps, short of medical treatment, that typically will prevent diarrhea from causing dehydration.

EPA should more carefully examine the presumed connection between ingestion of high sulfate drinking water and dehydration. This examination should include both physiological (as noted by Region 8) and non-physiological factors. A better understanding of the link (if any) between high sulfate drinking water and dehydration is needed before a scientifically defensible MCLG can be set.

B. The scientific studies relied on by EPA in setting the MCLG are seriously flawed

As noted above, EPA relies on a very limited database (two studies) in proposing a 500 mg/l sulfate MCLG. Both studies are seriously deficient. After reviewing the two relevant studies, Region 8 concluded in 1994 that "there is no credible quantitative information supporting the 500 mg/l standard." See Appendix D. Although recognizing some of the flaws in the two studies, EPA believes that the studies still are sufficient to support establishment of the proposed sulfate MCLG at a level of 500 mg/l, despite Region 8's conclusions and the Agency's previous determinations that the studies provided an inadequate basis for setting a sulfate standard.

The flaws in the studies relied on by EPA in proposing a sulfate MCLG of 500 mg/l are discussed briefly below, and in greater detail in Appendix C.

1. The Chien study (1968)

This is a case study of three infants between five and twelve months of age who were provided formula prepared with water containing between 630 and 1150 mg/l of sulfate. It was reported that the infants developed diarrhea shortly after ingestion of the formula, and that the diarrhea ended after use of the high sulfate water was discontinued. This study is one of the primary reasons for EPA's belief that infants are a sensitive subpopulation with respect to sulfate.

EPA concedes that the Chien study did not consider the potential effects of osmolarity (specifically hyperosmolarity) or viral gastroenteritis as possible causes of the observed diarrhea. See 59 Fed. Reg. at 65582. The water included not only high sulfate levels, but also high levels of total dissolved solids, calcium, magnesium and sodium. Nevertheless, EPA claims that the Chien study provides qualitative evidence of the effects of sulfate, although it should not be used quantitatively in a sulfate risk assessment. See id.

NMA agrees that the Chien study should not be used quantitatively to establish a sulfate MCLG. However, NMA believes that there are additional deficiencies in the Chien study that raise serious questions as to whether that study should be given much qualitative weight. Foremost among these factors, of course, is the extremely small sample size (3 infants). Particularly with an effect that appears to vary widely among individuals, a large sample size is needed to properly determine the validity of presumed causal relationships. Furthermore,

given that the Chien study was essentially a clinical case report, there obviously was no control group to help assess the validity of the perceived results.

There are other flaws or ambiguities in the Chien study. First, it appears that the water consumed by the infants was boiled, which may have resulted in higher sulfate concentrations actually being consumed than were present in the water prior to boiling (since boiling would reduce the amount of water but not the amount of sulfate in that water). See David E.C. Cole, "Infantile Gastroenteritis Due to High-Sulfate Water: A Critical Assessment" (August 14, 1992) (copy included as Appendix E). Second, it appears that all three infants were recent arrivals in the area. Thus, to the extent the Chien study is of any qualitative benefit at all, it may stand more for the proposition that transients are susceptible to high sulfate drinking water, as opposed to infants being particularly susceptible to such water. In the absence of a study or other information relating to resident infants, this possibility cannot be ruled out.[6] Finally, the Chien study did not compare how the three reported cases of diarrhea related to the total number of infants in the area exposed to similar levels of sulfate in drinking water. Thus, the study does not effectively eliminate other potential causes for the observed diarrhea. For example, EPA's 1992 Workshop also noted that at the time of the Chien study, there had been an epidemic of electrolyte disturbance due to hyperchloremia.

Another potentially relevant factor that may not have been adequately considered is whether the formula fed to the infants discussed in the Chien study could have exerted an influence on the results. At least two of the three infants discussed in the Chien study were fed powdered milk, which was unregulated at the time and which may have adversely affected the

[6] The South Dakota study that currently is being conducted may help address this issue.

infants. EPA's 1992 Workshop noted that the osmotic load of baby formula is unknown but can affect infant reaction and tolerance to sulfate, meaning that not all diarrhea experienced would be attributable to sulfate. The Workshop panel specifically noted that at the time of the study, there existed hyperosmotic formulas that caused infant diarrhea even without the presence of sulfate. Thus, it is possible that the diarrhea reported in infants in the Chien study was attributable (in whole or in part) to the formula they were fed, rather than the high sulfate water mixed with that formula.

Richard R. Monson, M.D., SC.D. (a physician and professor in the Department of Epidemiology at the Harvard School of Public Health) evaluated EPA's 1990 proposed sulfate standard and the Chien study (which formed the primary basis for the 1990 proposal as well as the current proposal). Dr. Monson concluded: "The analysis connecting these anecdotal experiences [the Chien study's report of three infants experiencing diarrhea] to the current recommendation stretches the bounds of reality." A copy of Dr. Monson's statement is included as Appendix F. Dr. Monson's conclusion is equally valid today. The Chien study cannot form a quantitative or qualitative foundation for establishment of a MCLG or a MCL for sulfate.

The serious flaws in the Chien study are discussed further in Appendix C.

2. The Peterson survey (1951)

This study dealt with a survey questionnaire distributed to residents of North Dakota who were believed to be consuming high sulfate drinking water. One of the questions included in the questionnaire involved potential laxative effects caused by the water. The conclusion drawn from this survey was that water containing over 750 mg/l of sulfate generally is laxative, whereas water containing less than 600 mg/l of sulfate would be considered safe.

Like the Chien study, the Peterson study suffers from a number of significant flaws. First, it is unclear how Peterson, in presenting the graphical analysis included with his study, determined which of the over 2,000 completed questionnaires to include in the graphs. The study indicates that only about 300 completed questionnaires provide sufficient information on laxative effects of water, but an independent review of the graphs reveals only approximately 120 data points. See Appendix C. It is unclear how these data points were selected. If the figure of 120 data points is correct, it represents only 5 to 6 percent of completed questionnaires, raising questions as to the validity of the reported results (or, at a minimum, the representative nature of those results).

Second, as with any questionnaire, there may be bias in the reporting of results. Merely inquiring of individuals whether they experience diarrhea does not suffice to connect that diarrhea to sulfate in drinking water. Numerous other sources could have accounted for the reported diarrhea (including microbes in the drinking water, microbes in food consumed, other constituents present in the water, etc.). Because the Peterson study was simply a survey, there was no control group and no way to control outside variables. Moreover, in developing survey questions and interpreting survey results, subjective bias of the surveyor is inevitable and must be considered in evaluating the results of any survey.

Third, Peterson graphed only levels of sodium sulfate and magnesium sulfate, and did not address calcium sulfate. Nor did Peterson focus on the total ionic species of the water or the relationship between various ions. These factors all combine to raise serious doubts about the validity of the results of the Peterson study.

As part of its review of the proposed MCL, NMA's consultants reviewed and reanalyzed the results of the Peterson study, attempting to the extent possible to account for some of the above concerns. That analysis, which appears in Appendix C, suggests that the safe sulfate level is actually in the range of 1800 mg/l (over three times higher than EPA's current proposed MCLG).

3. Other sources

In the preamble to the proposed rule, EPA mentions in the proposed rule the World Health Organization ("WHO") sulfate standard of 400 mg/l the Canadian guidelines for sulfate of 500 mg/l. See 59 Fed. Reg. at 65582-83. The WHO standard appears aimed primarily at protecting infants in third world countries, where medical care may be extremely poor and the risk of diarrhea leading to dehydration and more serious impacts is vastly higher than it is in the United States. Moreover, the WHO guideline assumes that a significant amount of sulfates also will be ingested in food (an assumption not made by EPA), resulting in a more stringent standard for drinking water. Finally, as EPA notes in the preamble to its current proposal, the WHO standard is based in large part on aesthetic considerations. For these reasons, the WHO standard is not persuasive with respect to adoption of a sulfate MCL. The WHO guidelines are discussed further in Appendix C.

The Canadian guidelines also are based on aesthetics and in this sense are more analogous to EPA's SMCL for sulfate than they are to the proposed MCL.

C. **More recent studies, although not conclusive, provide a better indicator of the health effects of sulfate and support the proposition that the proposed 500 mg/l MCL is overly conservative**

As noted above, EPA has helped fund studies in North Carolina on piglets and humans. These studies have been completed, but are still undergoing peer review. NMA's consultant has reviewed the results of these studies. These studies suggest that the appropriate MCLG for sulfate is significantly higher than the proposed 500 mg/l level proposed by EPA. Moreover, although these studies are a significant improvement over the older studies relied on by EPA in the proposal (e.g., there was better control of outside variables), there are still enough areas of uncertainty to warrant further investigation before any standard is set.

1. **The human studies**

The North Carolina studies included two human experiments. The first study exposed four human volunteers to increasing concentrations of sulfate in drinking water over twelve days, with constant diet and constant fluid intake. The six concentrations of sulfate were 0, 400, 600, 800, 1000 and 1200 mg/l. No individuals reported diarrhea and, outside of a possible decrease in transit time, no significant impacts were noted.

The second study involved six human volunteers monitored over a 12 day period. During the first six days, the volunteers consumed drinking water with no sulfate. Over the last six days, the volunteers consumed water containing 1200 mg/l sulfate. The results of this study indicated an increase in mean stool weight, but no statistically significant difference in number of stools, transit time or stool consistency.

The results from these two human studies were combined for statistical purposes. When this was done, a statistically significant decrease in stool consistency and transit time at 1200 mg/l was observed.

The authors' preliminary conclusion is that water containing 1200 mg/l sulfate (measured as sodium sulfate) produced mild but statistically significant increases in stool weight and decreases in (self-reported) stool consistency and transit time, whereas water containing 1000 mg/l had no effect. Thus, the results of these studies suggest that the level at which sulfate impacts are observed is much higher than the 500 mg/l MCLG proposed by EPA.

Although the North Carolina studies appear to have been fairly well designed, and will be useful in designing further studies, they cannot be considered conclusive for several reasons. First, the sample size (10 in the combined studies) is quite small. With a sample size this small, results in the 95% confidence range can be quite broad. Second, the study did not measure stool osmolarity, which would have helped assess the cause of the effects noticed. Third, the dose ranges arguably were too low. Fourth, although the studies controlled dietary intake and matched the caloric intake to the subjects' normal intake, the meals were not matched to the normal type of meal consumed by the subjects. Thus, the change in diet might have had some impact on the results of the study. Fifth, combining results of two different study designs may be useful to some extent, but the very different nature of the study designs weakens the statistical analysis of the combined results. For all these reasons, the human studies recently conducted in North Carolina are persuasive in demonstrating that the proposed MCLG of 500 mg/l for sulfate is overly conservative, but are not in and of themselves sufficient to set a

MCLG. The North Carolina studies will prove useful in designing future studies, and EPA should wait for such studies to be completed before adopting a sulfate MCL.

The results of the North Carolina human studies are discussed further in Appendix C.

2. The piglet studies

The North Carolina studies also involved two piglet experiments. Both experiments utilized 40 infant piglets divided into four groups that were fed increasingly high levels of sulfate as part of formula. In the first study, sulfate concentrations fed to the piglets were 0, 1200, 1600 and 2000 mg/l. In the second study, the concentrations were 0, 1800, 2000 and 2200 mg/l. The study lasted for 16 days, with the authors observing eating habits and feces consistency. The reported results indicate that none of the sulfate concentrations affected normal weight gain. Sulfate at 1600 mg/l caused slightly more soft and liquid stools, whereas water with sulfates at 1800 mg/l and above resulted in significant diarrhea. The results of these studies support a finding of no impact at concentrations below 1600 mg/l of sulfate.

The results of these (as yet unpublished) studies are supported by a 1992 study covering 28 days and involving 415 weaned pigs. The pigs were provided drinking water containing sulfate in concentrations of 600, 1200 and 1800 mg/l. The conclusion of the study was that concentrations of up to 1800 mg/l had no adverse effect on nursery pig performance.

The piglet studies are discussed further in Appendix C.

3. The recent studies demonstrate the overly conservative nature of a 500 mg/l MCLG

The recent North Carolina studies suggest that the level of sulfate to which humans can be exposed with no discernible impact is much higher than believed by EPA or

suggested by the earlier studies relied on by EPA. Even interpreting the results of the study conservatively, it appears that concentrations of up to 1200 mg/l have little or no impact, whereas concentrations at 1800 mg/l or above have a significant and noticeable impact. Although these studies are not perfect, they are much more comprehensive, focused and scientifically defensible than the older studies relied on by EPA, both of which were conducted over 2 decades ago without tight controls on potentially critical variables. The North Carolina studies do not suffice to set a sulfate MCLG, but they do demonstrate that the proposed 500 mg/l MCLG is far too conservative. The North Carolina studies should be used to develop additional studies designed to confirm the results of the recent studies while refining those results and controlling all relevant variables to the greatest extent possible. This is consistent with the approach recommended by Region 8, which urges that the results of the recent North Carolina studies be evaluated carefully before proceeding with promulgation of a sulfate standard. See Appendix D.

D. There is no basis for EPA to change its earlier conclusions, repeatedly expressed, that there is no adequate scientific basis to set a sulfate MCLG

The possibility of establishing a sulfate MCL has been considered by EPA for over a decade. In 1985, EPA concluded that it lacked adequate data on which to base a MCLG for sulfate. After citing almost the same authority relied upon for the present proposed MCLG/MCL, EPA stated:

> An RMCL [the pre-1986 term for what now is referred to as a MCLG] and primary drinking water regulations will not be developed for sulfate as there are not sufficient data at the present time on which to set a level for health protection. However, exposure to sulfate at high levels does present a health concern for transient exposure situations and EPA will recommend an RMCL in the future based upon new data and research results as available.

See 50 Fed. Reg. 46979-46980 (November 13, 1985). Obviously, EPA has not acted consistent with this conclusion. Instead, the Agency has proposed a sulfate standard in 1994 that is not "based upon new data and research results," but rather is based upon the same data found to be insufficient in 1985.

Again in 1987, EPA stated that it did not believe that existing data were adequate to support an MCLG for sulfate with regard to adults and infants. See 52 Fed. Reg. 25726 (July 8, 1987). In relating the regulatory history of its most recent proposal, EPA does not mention either its 1985 or its 1987 conclusions about the insufficiency of data to support a sulfate standard. See 59 Fed. Reg. at 65581.

On July 17, 1989, the Metals Subcommittee of EPA's Science Advisory Board Environmental Health Committee reviewed an earlier draft of a sulfate drinking water health criteria document (dated August 1987). The purpose of the review was to determine whether a drinking water equivalent level ("DWEL") should be set. Establishment of a DWEL is a critical first step in setting the MCLG for non-carcinogenic chemicals. See 54 Fed. Reg. 22068 (May 22, 1989). The Subcommittee concluded that the existing data, "taken singly or in toto . . . does not provide data adequate to determine either a chronic or acute DWEL." Furthermore, the Subcommittee indicated that all studies reviewed (including the Chien and Peterson studies) were lacking in some specific dimension and could not be related coherently to other data. See Science Advisory Board, Metals Subcommittee letter to William K. Reilly, "Science Advisory Board's Review of the Sulfate Health Criteria Document" (July 17, 1989) (copy included as Appendix G).

The 1992 EPA Workshop also noted deficiencies in the existing database for sulfate and recommended that additional studies be undertaken.[7]

Despite its earlier conclusions that the existing database was inadequate and inconclusive, EPA now relies on precisely that same database to propose a sulfate MCLG of 500 mg/l. The only additional studies to be conducted since EPA's conclusions about the inadequacy of data (e.g., the North Carolina studies) have been undertaken only recently and suggest that the purposed 500 mg/l standard is grossly overconservative. These studies, however, have not been considered in drafting the current proposal. EPA's preamble merely states that the "studies have been completed and are undergoing internal and external peer review." See 59 Fed. Reg. at 65582. Even conceding the pressure EPA is under to satisfy the current statutory mandate and live up to the terms of the settlement agreement in the Oregon litigation, EPA's insistence on establishing a 500 mg/l MCLG for sulfate is scientifically indefensible in light of the justified criticism that has been leveled at the extremely limited database forming the basis for that proposed level.

Despite the time pressures it is facing, EPA still has a duty to utilize sound science in adopting legally enforceable requirements. The scientific database relied on in

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[7] The 1992 Workshop panel consensus "seemed" (a word used in the meeting minutes) to be that a 500 mg/l level for sulfate was "conservative but justifiable." The panel noted that there were no differences between 400 and 500 mg/l, but that there were differences between 500 and 1200 mg/l in terms of health effects. This is a very gross distinction and admittedly a conservative one. Moreover, the conclusion was reached in response to EPA inquiries into what standard might be justifiable if the Agency were forced to make a decision based on the current (admittedly inadequate) database. Thus, the conclusion that a 500 mg/l level is justifiable (albeit conservative) does not really address the issue of whether adequate scientific research has been conducted to quantify the effects of sulfate and to justify adoption of a MCL as a general matter, with all its attendant costs and implications.

establishing the proposed sulfate MCLG is inadequate and inconclusive, and EPA has not taken into account more recent, more compelling data suggesting that a much higher standard is appropriate. As stated in the EPA section of the Regulatory Program of the United States Government (April 1, 1991 - March 31, 1992), at 514: "Strong science lies at the heart of quality judgments about environmental risks." The science underlying the proposed sulfate MCLG is tenuous, and more recent, stronger science suggests that the proposed standard is inappropriate.

In light of all these deficiencies in the scientific database, EPA should defer any action on sulfate at this time. There is no reliable data supporting a standard of 500 mg/l. The most recent, most reliable data suggest that a significantly higher standard is appropriate, but even these results are not sufficient in and of themselves to set a numeric MCL. For EPA to proceed at this time with promulgation of a 500 mg/l standard would be arbitrary and capricious and not supported by a rational basis. An agency decision is arbitrary and capricious where it is not based on a consideration of all relevant factors or where there is a clear error of judgment. See, e.g., Citizens to Preserve Overton Park, Inc. v. Volpe, 401 U.S. 402, 416 (1971). Promulgation of a 500 mg/l sulfate standard would fail both prongs of this test, since EPA would have failed to consider the most recent scientific data and would have based its standard on data so flawed as to be of little practical use.

At an absolute minimum, EPA should defer any further sulfate action until it has reviewed the results of the recent North Carolina studies. After it has reviewed those studies, EPA would need to repromulgate any MCL proposal if the Agency determines that these studies

were reliable and were sufficient to establish a standard.[8] It is inappropriate to promulgate a sulfate MCL without providing a formal opportunity for the public to review and comment on the results of the recent studies.

III. EPA'S ECONOMIC ANALYSIS IS INCOMPLETE AND FLAWED

A. EPA's analysis completely ignores potentially enormous costs associated with adoption of a 500 mg/l sulfate MCL

EPA's cost/benefit analysis of the proposed sulfate MCL completely ignores potentially enormous costs associated with adoption of a sulfate MCL at the proposed 500 mg/l level. The costs that EPA has ignored are those associated with the adoption of MCLs as enforceable standards in other federal and state programs (including remediation programs). These costs are direct, real costs that will result from adoption of a sulfate MCL, and hence must be considered in any analysis of the proposed rule. Such costs will dwarf the costs to water providers of providing treatment (or notification and/or bottled water alternatives) under the proposal.

EPA's economic analysis ignores the following potential costs that would result from adoption of the sulfate MCL:

1. Cleanup costs under CERCLA

Sulfate is not listed as a CERCLA hazardous substance in 40 C.F.R. § 302.4, although several sulfur compounds are listed (e.g., cupric sulfate). However, federal and state

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[8] As discussed above, NMA believes that the North Carolina studies, although useful, do not suffice to set a numeric MCL, but instead should serve as the basis for designing further, tailored studies.

agencies may take the position (and in some cases have already done so) that a release of sulfate qualifies as a release of a "pollutant or contaminant" that may present an imminent and substantial danger to public health or welfare, thus making the release subject to a removal action under the National Contingency Plan ("NCP") (possibly including removal of the pollutant or contaminant from any contaminated natural resource). See 42 U.S.C. § 9604(a)(1)(B); 40 C.F.R. § 300.3(a)(2). Moreover, if sulfate is "released" (as that term is broadly defined in CERCLA) along with one or more hazardous substances (e.g., metals), government authorities may seek to have the entire remediation addressed under CERCLA (including any portion of the remediation addressing sulfate, an admittedly non-hazardous substance).[9]

In light of current government approaches toward the remediation of sulfate, adoption of a sulfate MCL under the SDWA is of potentially enormous significance because the MCL will have automatic, immediate impacts under CERCLA. MCLGs and MCLs are presumptive cleanup standards under CERCLA (both in the statute and the NCP), if relevant and appropriate under the circumstances of the release. See 42 U.S.C. § 9621(d)(2)(A); 40 C.F.R. §§ 300.430(e)(2)(B)-(C) & 300.700(c)(5)(vii). Congress has deliberately created an interconnection between MCLGs and CERCLA cleanup standards, an interconnection that automatically occurs whenever EPA adopts a new MCLG. EPA must keep this interconnection in mind as it develops the sulfate MCLG, and must develop an adequate administrative record supporting use of the MCLG as a cleanup standard. Failure to do so would be an abdication of

[9] Releases of pollutants or contaminants also may suffice for a facility to be placed on the National Priorities List pursuant to 42 U.S.C. § 9605(a).

EPA's obligations under CERCLA and the SDWA, and would render the rulemaking subject to challenge under the Administrative Procedure Act.[10]

The area where the current administrative record is most glaringly incomplete with respect to the automatic adoption of MCLGs as presumptive cleanup standards under CERCLA is in EPA's failure to account for increased remediation costs likely to occur as a result of adoption of the MCLG. Included in Appendix C is a review of EPA's cost/benefit analysis. With respect to increased remediation costs, Appendix C attempts to quantify the likely effects of adoption of a sulfate MCL that will automatically be translated as a groundwater cleanup standard under federal and state superfund programs. Using two different approaches, and after carefully reviewing available databases on incidences of high sulfate groundwater at existing or potential superfund sites, it appears that adoption of a sulfate MCL at 500 mg/l could lead to annual increased costs of between $600 million dollars per year (using the simplest approach) and $3-12 billion dollars a year (using a more sophisticated approach). This analysis is presented (and accompanying Economics Appendix) in the attached Appendix C. These costs dwarf the costs identified by EPA as likely to occur as a result of adoption of the 500 mg/l sulfate MCL, which range from $16 to 147 million dollars (with $86 million dollars being the estimated cost for the preferred option).

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[10] Moreover, most states have their own groundwater remedial programs, which frequently rely on federal MCLs as groundwater cleanup standards. For example, MCLs automatically become groundwater standards in Arizona (as discussed below); these groundwater standards in turn become cleanup standards under the Arizona version of CERCLA. See Ariz. Admin. Code R18-7-109.A.2 & R18-7-109.D.2.b.

2. Natural resource damages

Groundwater pollution can be a component of actions for natural resource damages under CERCLA, the Clean Water Act, and the Oil Pollution Act of 1990. Such actions have become a significant component of enforcement of these statutes. The Department of Interior ("DOI") rules governing natural resource damage assessments are in place, and continue to be refined and broadened. Under the Natural Resource Damage Assessment Rule (the "NRDA Rule"), MCLs are used to define injury to groundwater resources. The NRDA Rule states that an injury has occurred to groundwater resources where there exist:

> Concentrations of substances in excess of drinking water standards, established by Sections 1411-1416 of the SDWA, or by other Federal or State laws or regulations that establish such standards for drinking water, in groundwater that was potable before the discharge or release.

See 40 C.F.R. § 11.62(c)(1)(i). Because MCLs are a measure of potability (i.e., MCLs protect human health), exceedances of these standards are used to define "injury" under the NRDA Rule.

Although CERCLA and the NRDA Rule specify that injury may arise only from a release of a hazardous substance, natural resource trustees have asserted claims for damages to groundwater resources on the basis that sulfate -- a non-hazardous substance -- may be present. Although such claims may have no merit, trustees will argue that a MCL for sulfate should be used for purposes of defining injury to natural resources. Thus, even in the absence of sound evidence that sulfate poses human health risk at concentrations of 500 mg/l, a trustee will use the MCL as a basis for asserting that groundwater that is otherwise potable is "injured," and will seek damages for that injury.

The issue of omitted costs associated with natural resource damage assessments is discussed in Appendix C.

3. RCRA programs

Adoption of a sulfate MCL ultimately could have impacts on a number of RCRA programs that reference at least some of EPA's MCLs. These programs include: (1) the proposed RCRA corrective action rules (see proposed 40 C.F.R. §§ 265.521(a)(1) & 265.525(d)(1)(iv)); (2) the groundwater protection standard applicable to TSD facilities (see 40 C.F.R. § 264.94); (3) the standards that land disposal sites must satisfy (see 40 C.F.R. § 241.204-1); (4) the standards applicable to solid waste disposal facilities (see 40 C.F.R. § 257.3-4 and Appendix I); (5) the procedures used to define wastes that exhibit the characteristic of toxicity and thus are hazardous waste; and (6) the RCRA mine waste program currently under development by EPA.

4. Uranium Mill Tailings Radiation Control Act

Uranium mill tailing sites are subject to groundwater protection standards adopted under RCRA. See 40 C.F.R. § 192.32(a). If the sulfate MCL becomes part of the RCRA groundwater protection standard, it will also be applicable to active uranium mill tailing sites.

5. Underground injection control program requirements

For all underground injection wells, including Class V wells, the Underground Injection Control program prohibits the movement of contaminants into underground sources of drinking water in concentrations exceeding MCLs. Adoption of a sulfate MCL could have an impact on thousands of existing wells (particularly those that qualify as Class V wells) under this program.

6. State groundwater standards and permit programs

Many states automatically adopt MCLs as enforceable groundwater protection standards. For example, Arizona requires that MCLs promulgated by EPA be adopted as groundwater protection standards within one year of the adoption of the MCL unless there is no scientific evidence to support the standard. See A.R.S. § 49-223.A. Parties that cause a standard to be exceeded in the aquifer are subject to civil and criminal liability, as well as to potential remediation costs under the state superfund program.

Moreover, groundwater standards adopted by states are also relevant in determining the terms of groundwater quality protection permits. In Arizona, aquifer protection permits require, inter alia, that aquifer water quality standards be met at a specified point of compliance, which typically is at or inside a facility's property boundary. See A.R.S. §§ 49-243.B.2 & 49-244. This requirement is used to determine design and operating standards imposed on facilities required to obtain permits (including virtually all mining operations). For example, the requirement to meet aquifer water quality standards can be instrumental in requiring installation of control measures such as liners, or in requiring different operating practices. All of these steps can be quite expensive, making potential adoption of a sulfate MCL in states with groundwater protection permit programs an issue of particular concern to mining operations.

7. Private litigation costs

If a sulfate MCL is adopted at the overly conservative level of 500 mg/l, it may be alleged to be a required standard of care in private litigation claims (toxic tort, public and private nuisance, trespass, strict liability, negligence, etc.). Although the health effects of

sulfate are admittedly minor, exceedances of the sulfate MCL in groundwater could be used as the basis for lawsuits predicated on (for example) property value diminution.

B. EPA is required to take the costs identified above into account before adopting a final sulfate rule

In earlier comments on the 1990 sulfate proposal, several parties argued that EPA should take into account the types of costs identified above. Because EPA deferred action on sulfate in the final Phase V rule, it did not respond formally to those comments as they related to sulfates. However, the docket for the current rulemaking contains draft responses to these costs-related comments. In these draft responses, EPA took the position that the costs of complying with MCLs that are enforceable under other programs should not be attributed to the SDWA, but instead should be considered in promulgating the regulations under the other programs.

This response does not address the legitimate concerns raised in the 1990 comments and again in these comments. In the case of CERCLA, for example, presumptive use of MCLGs as cleanup standards is required by statute, so there is no chance to challenge under CERCLA the use of a sulfate MCLG as a cleanup standard. If EPA does not consider the full costs of complying with a sulfate standard in this rulemaking, there is simply no other forum in which the costs can be considered.

Moreover, as discussed below, EPA is required to consider these costs as part of its general rulemaking obligations, regardless of whether the SDWA specifically calls for consideration of such costs.

1. Regulatory Program of the United States Government

The Office of Management and Budget ("OMB") establishes guidelines governing the rulemaking process as it applies to all federal agencies. These guidelines are gathered into the "Regulatory Program of the United States Government" (the "Regulatory Program").[11] The Regulatory Program includes sections addressing each of the federal agencies and outlining the regulatory principles of each agency.

In the Regulatory Program, EPA states:

> EPA seeks to control pollution as efficiently and cost-effectively as possible, focusing the Agency's limited resources on cases of greatest risk, where solutions are practical and legal authority is clear. This policy requires sound scientific data and careful evaluation of all aspects of an environmental problem.

Regulatory Program, at 513 (emphasis added). It is contrary to this guiding principle for EPA to establish a sulfate MCL based on limited and questionable scientific data without considering the enormous costs that adoption of the MCL would impose through other federal and state environmental programs. NMA requests that EPA reevaluate the necessity of setting a sulfate MCL in view of the above-stated guiding principles. Such a re-evaluation would be consistent with the philosophy articulated in the Perciasepe Declaration.

2. Executive Order 12866

On September 30, 1993, President Clinton signed an Executive Order entitled "Regulatory Planning and Review." See 58 Fed. Reg. 51735 (October 4, 1993). This order

[11] Citations in these comments to the Regulatory Program are to the version dated April 1, 1991 - March 31, 1992, the latest version to which NMA has access.

supplements the general rulemaking guidance found in the Regulatory Program, and is the most recent binding guidance on the preparation of agency rules (including EPA rules).

EPA has conceded that the proposed sulfate MCL is a significant regulatory action. See 59 Fed. Reg. at 65595. For every significant regulatory action, unless prohibited by law, Executive Order 12866 requires the agency issuing the rule to provide to OMB, inter alia, the following:

. . .

> (ii) an assessment, including the underlying analysis, of costs anticipated from the regulatory action (such as, but not limited to, the direct costs both to the government in administering the regulation and to businesses and others in complying with the regulation, and any adverse effects on the efficient functioning of the economy, private markets (including productivity, employment, and competitiveness), health, safety, and the natural environment), together with, to the extent feasible, a quantification of those costs.

See 58 Fed. Reg. at 51741 (emphasis added).

Even if the SDWA does not specifically require EPA to consider the costs imposed through adoption of MCLs as enforceable standards in other environmental programs, the dictates of Executive Order 12866 clearly require EPA to consider and attempt to quantify those costs. Even if the costs of complying with MCLs transferred to other programs cannot be considered costs of "complying with the regulation," those costs clearly represent "adverse effects on the efficient functioning" of the economy and private markets. As discussed above, the additional remediation costs associated with adoption of a 500 mg/l sulfate MCL could range from hundreds of millions to billions of dollars annually.

Moreover, the list of costs identified in the above-quoted paragraph is not inclusive. The requirement is for EPA to provide an assessment of "costs anticipated from the regulatory action," including (but not limited to) the listed types of costs. Even if costs of complying with MCLs enforced through other programs do not fall within the types of listed costs (which NMA believes they do), such costs clearly can be "anticipated from the Regulatory Action [adoption of the sulfate MCL]." Moreover, the attached Appendix C provides a framework for quantifying a large portion of those costs.

Thus, EPA cannot escape consideration of the full costs of adoption of its sulfate MCL by simplistically arguing that the SDWA does not explicitly require it to consider such costs in establishing the MCL. These costs must be quantified to the extent possible and provided to OMB as part of the regulatory package. Alleging that the costs should be considered under other programs, as EPA was prepared to do in 1990, merely sidesteps the issue and would prevent such costs from ever being considered. These costs must be considered in this rulemaking or they will not be considered at all. Given the potentially enormous scope of these costs, EPA would be abdicating its ability to regulate in a responsible manner, as well as violating its own stated goal of regulating in a scientifically defensible and cost-effective fashion, if it proceeds with adoption of a 500 mg/l MCL for sulfate without considering all the costs associated with such an action.

C. **EPA's cost/benefit analysis significantly overstates the benefits of the proposed rule**

EPA makes a number of questionable assumptions in calculating the expected benefits of the proposed rule. An analysis of the benefit component of EPA's analysis is

included in Appendix C. Among the primary questionable steps taken by EPA are the following:

1. EPA should have, but did not, calculate as an initial step the baseline expected cost to society if no action is taken.

2. EPA assumes that travelers visit areas with high sulfate water to the same extent that they visit other areas. There is no documentation that travelers are as likely to visit these generally more remote areas in the same proportion as they would visit other areas.

3. EPA assumes without documentation that the frequency of travel is the same for adults with infants as it is for other members of the adult population, and that the infant accompanies the adult on all non-business travel. In reality, adults with infants may travel somewhat less frequently than adults without infants. Furthermore, adults with infants likely travel without the infant on some occasions (especially in two parent homes where only one parent is traveling).

4. EPA assumes that all infants in areas with high sulfate water are exposed to that water. This does not account for the fact that not all infants are fed with tap water (e.g., breast feeding, pre-mixed formula, formula mixed with bottled water, etc).

5. EPA assumes that all cases of infant diarrhea require medical treatment (10% requiring hospitalization, 90% requiring out-patient treatment). EPA ignores the possibility that mild cases of diarrhea do not require any medical treatment at all. A better assumption, based on nationwide statistics discussed in Appendix C, is that only 10% of diarrhea cases require medical treatment.

6. EPA assumes that each hour a parent spends in seeking medical attention is a lost work hour. This ignores the fact that not all parents are employed full time and that medical attention (for the adult or for a child) can and often is obtained during non-working hours.

7. EPA assumes that all travelling adults will seek medical attention, whereas only 20% of new-resident adults will seek medical attention. This distinction is not explained and makes little sense.

8. EPA assumes that any person exposed to sulfate levels in excess of 500 mg/l will benefit from the proposed regulation. This ignores the results of the recent North Carolina studies suggesting that exposure to much higher sulfate levels does not cause any adverse effect.

9. EPA assumes that the average hospital stay is four days. As discussed in Appendix C, a better estimate reflecting current hospital practice is two days.

10. EPA assumes that the average hourly wage of adults that would be lost during hospitalization is $19.00 per hour. A better estimate (based on statistical data) is $10.33 per hour, as discussed in Appendix C.

The possible benefits of the proposal are recalculated in Appendix C to address the above considerations. This recalculation demonstrates that the maximum potential benefit of the proposal is only between $7.3 million and $18 million if the sulfate level is set at 500 mg/l, which appears to be significantly below EPA's estimated benefits (which the Agency does not quantify anywhere in the proposed rule).

IV. EPA SHOULD NOT SET A SULFATE MCL AT THIS TIME

A. To finalize the 500 mg/l standard would be arbitrary and capricious

As repeatedly demonstrated above, EPA lacks sufficient data on health effects to justify a 500 mg/l MCLG or MCL for sulfate. Although EPA may argue that it has a legal obligation under § 1412 of the Safe Drinking Water Act to set a drinking water standard for sulfate, the agency can only do so once sufficient scientific data has been developed to sustain that standard. In addition, EPA has grossly underestimated the cost of compliance with the standard that it has proposed. The Agency's cost analysis is inadequate under the Safe Drinking Water Act and completely disregards the mandate of Executive Order 12866. Given the inadequacy of the scientific and economic data, it would be arbitrary and capricious for EPA to finalize its 500 mg/l sulfate MCL.

B. EPA is not required to adopt a sulfate MCL by either the terms of the Safe Drinking Water Act or the Oregon consent decree

The SDWA does not require EPA to adopt a MCL for sulfate. Section 1412 of the Act requires EPA to adopt a NPDWR, which may be either a treatment technique or a MCL. A treatment technique may be adopted if it is not economically or technologically feasible to ascertain the level of a contaminant. See 42 U.S.C. § 300f(1)(C)(ii). In American Water Works Association v. Environmental Protection Agency, 40 F.3d 1266, 1270-71 (D.C. Cir. 1994), the United States Court of Appeals for the District of Columbia Circuit specifically held that this language does not mean that a MCL must be adopted if it is physically possible to measure the level of a contaminant at reasonable cost. In upholding EPA's decision to regulate lead with a treatment technique rather than a MCL, the court agreed with EPA that the Agency has the flexibility to adopt a treatment technique rather than a MCL where doing so would be

more consistent with the overall goals of the SDWA. It would be equally consistent with the SDWA for EPA to not adopt a sulfate MCL where doing so would not be supported by adequate scientific data and would impose huge costs on society, particularly where the health and economic benefits of adopting such a MCL are minimal. If forced to adopt a standard of some sort (through litigation or otherwise), EPA could adopt an approach similar to that outlined in the proposal with respect to monitoring, notification and provision of bottled water, without formally establishing a sulfate MCL. This approach would be a cost-effective and efficient means of controlling ingestion of high sulfate water and preventing any adverse effects that such ingestion might cause. If necessary, EPA could adopt an action level (instead of a MCL) for sulfate, as it did for lead.

Similarly, the Oregon consent decree does not require EPA to adopt a sulfate MCL. Instead, EPA is required simply to make a final regulatory decision as to sulfate. The consent decree does not specify what that decision must be, but rather leaves the Agency with discretion to make the appropriate decision. A decision not to adopt a MCL, or at most to adopt a treatment technique instead of a MCL, would be a valid exercise of EPA's discretion and would not violate the terms of the consent decree.

C. **Temporary, naturally reversible diarrhea is not the type of adverse effect on human health that should be considered in setting a MCLG**

EPA specifically requests comment on "whether, given the available information, a conclusion can be made that experiencing transient bouts of diarrhea resulting from ingestion of sulfate in drinking water is not an adverse effect in any segment of the population (adults or infants) within the meaning of the Safe Drinking Water Act." See 59 Fed. Reg. at 65591. NMA believes that this conclusion can be drawn, based on the available evidence.

As noted above, the only presumed adverse health effect caused by sulfate is short-term diarrhea in some individuals (from among the class of infants and travelers) exposed to high sulfate drinking water for the first time. EPA concedes that the effect is short-term and naturally disappears as the body acclimates to the water. As NMA has pointed out above, however, many of the assumptions made by EPA about the adverse effects of sulfate cannot be justified on the basis of the limited data currently available (e.g., the mechanism by which acclamation occurs and the time needed for this to occur). Therefore, the adverse effects posited by EPA may be significantly overstated.

Even if EPA has properly delineated the potential adverse effects of sulfate, there is no evidence in the SDWA or the accompanying legislative history that a temporary, naturally reversible effect that does not seriously impact an individual is the type of "adverse effect on the health of persons" that should be considered in setting a MCLG, with all the attendant costs associated with adoption of the MCLG and accompanying MCL. EPA should not set a MCLG for sulfate at the level that may cause short-term, naturally reversible diarrhea in some individuals (a possibility that NMA believes is significantly overstated by EPA, for the reasons stated above).

D. **If EPA decides to finalize the sulfate MCL, a disclaimer should be added that the MCL in not intended for use as a groundwater protection or cleanup standard in any other program**

If EPA adopts a sulfate MCL at any level, it should include a disclaimer which states that: (1) the appropriateness of the MCL as a cleanup standard or a groundwater protection standard was not considered as part of the SDWA standard-setting process from either a health risk viewpoint or a cost/benefit viewpoint; and (2) therefore, the sulfate MCL is neither

intended by EPA to be used as, and is not appropriate for use as, a cleanup standard or an enforceable standard in any program (other than state drinking water programs authorized under the SDWA). Such a disclaimer should provide at least some relief to the broad community subject to EPA's panoply of statutory programs, if for no other reason than it would provide an argument that the MCL should not automatically be applied in the other programs.

Alternatively, EPA could state that compliance with a final sulfate MCL is required only at points where water is actually used for human consumption. This language would provide some relief from misapplication of a final sulfate MCL as a uniform groundwater cleanup standard, and would help mitigate the potentially enormous costs of adoption of a sulfate MCL.

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF OREGON

CLARK DORISON, RALPH PROKOSEK, FRANK GRANDRAT, KATHY WILLIAMS, and CITIZENS INTERESTED IN BULL RUN, INC., Plaintiffs, v. CAROL M. BROWNER, Administrator of the United States Environmental Protection Agency; the UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, and the UNITED STATES, Defendants.	CIVIL No. 92-6280-HO AMENDED CONSENT DECREE
JOSEPH L. KOSAER, JR., et al., Plaintiffs, v. CAROL M. BROWNER, Administrator of the United States Environmental Protection Agency, the UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, and the UNITED STATES, Defendants.	CIVIL No. 89-6328-HO AMENDED CONSENT ORDER
RALPH PROKOSEK, et al., Plaintiffs, v. CAROL M. BROWNER, Administrator of the United States Environmental Protection Agency, et al., Defendants.	CIVIL No. 90-6363-HO AMENDED CONSENT ORDER
CITIZENS INTERESTED IN BULL RUN, INC., et al., Plaintiffs, v. UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, et al., Defendants.	CIVIL No. 92-1887-HA CONSENT DECREE

RALPH PROWSMIX, CITIZENS INTERESTED IN BULL RUN, INC., FRANK CRAWHART, JOSEPH MILLER, AND KATHY WILLIAMS, Plaintiffs, v. CAROL M. BROWNER, Administrator of the United States Environmental Protection Agency, THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, Defendants.	CIVIL No. 91-6349-TC AMENDED CONSENT DECREE

DECLARATION OF ROBERT PERCIASEPE

I, Robert Perciasepe, declare that the following statements are true and correct to the best of my knowledge and belief and are based on my personal knowledge, or on information contained in the records of the United States Environmental Protection Agency ("EPA" or "Agency") or supplied to me by current EPA employees under my supervision.

1. I am the Assistant Administrator for the Office of Water at EPA in Washington, D.C. I have held this position since October 1993.

2. As Assistant Administrator, I am responsible for implementing the Safe Drinking Water Act ("SDWA"), including development of the National Primary Drinking Water Regulations ("NPDWRs") in accordance with the court-ordered schedules in these cases. I am submitting this Declaration to meet the Agency's reporting obligations in the above-referenced Amended Consent Orders/ Decrees, and to support modifications of these

Orders/Decrees that EPA intends to seek.

3. In my October 1994 declaration, I reported that Congress was actively considering a number of amendments to the SDWA. Both the Senate and the House passed bills (the House, unanimously) that, if enacted, would have eliminated many of the statutory requirements to regulate contaminants covered by the Amended Consent Decrees/Orders or would have provided new statutory deadlines for regulating those contaminants that reflect priorities discussed below. The House bill received broad support from states, environmental groups, and the public water supply industry. While in the closing days of the session, efforts to conform the House and Senate versions of these amendments and enact amendments to the SDWA failed, this Congressional effort highlighted the general agreement that has developed in recent years that certain provisions of the SDWA should be amended.

While considerable progress in protecting drinking water has been made since enactment of the SDWA twenty years ago, many people are now concerned that the current program is not focused on the most serious health threats, that there is insufficient emphasis on the prevention of risk, that the public may not be receiving sufficient benefit from its expenditures for drinking water protection, and that the program may not be sufficiently flexible for unique small system situations.

In these times of increasingly difficult funding decisions at all levels of government, EPA feels compelled to undertake a careful examination of its overall program for implementing the SDWA, and to target resources on those activities which will achieve the greatest reductions in health risks, including future risks. Accordingly, EPA will be reevaluating all aspects of its drinking water program, including the research agenda, ways to prevent pollution of drinking water sources, efforts to improve state and local implementation of the program, projects to develop better data bases on occurrence and exposure to contaminants through drinking water, efforts to improve analytical methods for assessing health risks and measuring contaminants, and, of particular relevance here, development of regulations.

Identifying the activities that will result in the greatest reduction in health risks and therefore receive highest priority, requires careful analysis and consultation with state and local officials, water system representatives, and others that carry out the drinking water program throughout the nation. These decisions are particularly significant since the outcome of the analysis will be to target the limited resources for providing safe drinking water not only for EPA, but for all those engaged in providing safe drinking water in their communities. Further, since total resources are limited, activities determined to be of

lesser priority will necessarily be deferred, possibly for a long time.

4. Development and implementation of regulations is enormously resource intensive. Accordingly, it is critical that EPA set priorities for its national regulations based on the reduction in risks to the public health that will be achieved. To date, the Agency's drinking water regulatory agenda has largely been driven by statutory requirements without much attention to the comparative risks to health among the contaminants to be regulated. Before 1986, EPA promulgated regulations for 23 contaminants. Since then, the Agency has issued final regulations for 61 contaminants and proposed regulations for sixteen contaminants.

The SDWA provides: a list of 83 contaminants that EPA is required to regulate; an on-going obligation to regulate an additional 25 contaminants every three years; and an on-going obligation to review existing regulations for opportunities to provide greater protection of public health. In the past several years, this Court has entered Amended Consent Decrees/Orders that cover: seven contaminants (sulfate, arsenic, and five radionuclides) remaining from the initial list of 83; two regulations (Phase 5B and Disinfectants/Disinfection By-products) that together would cover 25 contaminants; the review of two existing regulations; and regulations to complete the statutory obligation for all public water systems to disinfect their

drinking water (the ground water disinfection rule).

EPA needs an opportunity to reassess whether the schedules in these Amended Consent Decrees/Orders accurately reflect the appropriate overall priorities for the drinking water program, and if they do not, to propose new schedules that better target our resources for risk reduction. This effort will take into account the need to improve existing regulations by ensuring that they are workable, by streamlining their implementation, and by developing better ways to achieve the results sought by the regulations, especially for small systems.

5. Scientists, suppliers of drinking water, public interest groups, and government agencies agree that microbiological contamination of drinking water supplies remains a serious concern. The First International Conference on Safety of Water Disinfection, sponsored by the International Life Sciences Institute, concluded that the risk of infectious waterborne disease is substantial, with health, social and financial implications in all parts of the world, and that drinking water disinfection is "essential". (Ann. Craun, et al., Summary of the Conference Proceedings, 43 Aqua 192 (1994)).

While disinfection has led to dramatic reductions in waterborne disease, in recent years there has been increased awareness that some forms of microbiological contamination persist. Some contaminants such as Cryptosporidium (which caused the disease outbreak in Milwaukee in 1993) are poorly understood.

Moreover, conventional disinfection may result in by-products with serious health implications. As a result, water supply professionals face the complex problem of optimally minimizing risks from both disinfection byproducts and microbial contaminants. Therefore, we are confident that our regulatory efforts to control microbial contamination should continue to be a high priority for the Agency.

6. There is, however, much less consensus among the experts and the interested public on the risk reduction that would be obtained from regulating many of the other contaminants covered by the Amended Consent Decrees/Orders.

EPA will need the services of most of the staff currently committed to regulatory development under the Amended Consent Decrees/Orders in order to undertake the comprehensive reassessment and redirection of the drinking water program outlined above. The staff will: meet with interested parties, develop overall priorities among the various elements of the program, propose priorities for development of regulations, and develop new detailed operating plans for achieving the regulatory priorities. Accordingly, as described in greater detail below, EPA intends to propose to Plaintiffs an interim extension of the schedules for the regulations that are imminent, and cessation of work on some regulations so that the Agency can redirect its resources to the reassessment effort. We currently expect to complete the reassessment and identify priorities for the

drinking water program, including regulatory priorities, by July 1995. Thereafter, we would initiate discussions with the Plaintiffs on revised schedules for the current regulations and new reporting requirements; we would hope to be able to complete those discussions by September 1995.

7. In the following paragraphs, I describe the status of the specific regulations under the Amended Consent Decrees/Orders and how the approach described would apply.

A. SULFATE. On November 30, 1994, the Administrator signed a notice to be published in the Federal Register proposing a regulatory decision for sulfate thereby meeting her obligation for proposing the sulfate regulations. 59 Fed. Reg. 655578 (Dec. 20, 1994). The Amended Consent Order further provides that the Administrator is to sign a notice to be published in the Federal Register taking final action with respect to sulfate by May 31, 1996.

EPA intends to propose to Plaintiffs a modification of the Amended Consent Order that would permit the Agency to suspend work on the final sulfate rule while the reassessment is completed and a new schedule is developed and discussed with the Plaintiffs.

B. PM10 SR. Under the Amended Consent Order, the Administrator is to sign a notice to be published in the Federal Register proposing regulations for certain contaminants no later than February 28, 1995. As I reported in October, much work has

been done on the major aspects of the proposal. However, there is considerable uncertainty within the Agency and among interested parties as to the risk reduction that would be achieved from the regulation of the contaminants in Phase 6B. Accordingly, EPA intends to propose to Plaintiffs an interim extension of the February 20, 1995 schedule for proposal of these regulations to September 15, 1995, during which time EPA would reassess the drinking water program and the parties would seek to reach agreement on a new schedule for proposal of these regulations. During this extension, EPA would suspend work on the proposal.

C. RADIONUCLIDES. Under the Amended Consent Order, the Administrator is to sign a notice to be published in the Federal Register taking final action with respect to the proposed regulations for radionuclides by April 30, 1995. As I reported in October, Congress has, for the second year, prohibited the Agency from using its current appropriated funds to promulgate final radon regulations. EPA intends to propose to Plaintiffs a modification of the Amended Consent Order to reflect the Congressional prohibition on final radon regulations, and an interim extension of the schedule for final action on the remaining radionuclides to September 15, 1995. During the extension, EPA would reassess the drinking water program and the parties would seek to reach agreement on a new schedule for the final regulations; EPA would not work on the final radionuclides

regulations during this time. In determining priorities, we will take into consideration that there are existing regulations for some radionuclides, namely radium 226 and 228, and the alpha and beta emitters.

D. GROUND WATER DISINFECTION. Under the Amended Consent Decree, the Administrator is to sign a notice to be published in the Federal Register proposing regulations requiring disinfection as a treatment technique for water systems using ground water supplies not under the direct influence of surface water no later than August 30, 1995. In October, I reported that due to the time and resources devoted to the disinfectants and disinfection by-products regulations, we were significantly behind our operating plan and internal schedule as to the ground water disinfection regulations. I also indicated that a regulation manager had been assigned to this rule, but that I did not anticipate that we could meet the August 1995 schedule for proposal of these regulations. As discussed in Paragraph 5 above, this rule, together with the disinfection and disinfectant byproducts regulations, is a high priority for regulatory development. However, it is now clear that we will not be able to propose these regulations in August 1995. The staff is working on a detailed operating plan for this rule, and we intend to reassign staff resources to this project as quickly as possible. We will report the status of the proposed rule in April in accordance with the Amended Consent Decree.

E. ARSENIC. Under the Amended Consent Order, the Administrator is to sign a notice to be published in the Federal Register proposing regulations for arsenic by November 30, 1995. It is now clear that we will not be able to meet this schedule. A number of uncertainties remain as to both the current health risk assessment for ingestion of arsenic and the treatment technologies for controlling arsenic. In addition, some of the regulatory options, based on current projections, would impose extremely high costs on public water systems and States, especially on a large number of smaller systems. Given this situation, we have concluded that the Agency needs to gather additional information on the potential health benefits of regulating arsenic and on potential treatment technologies before proceeding further with these regulations. EPA anticipates that much of the funding for additional research would come from outside parties working in cooperation with the Agency. Accordingly, EPA intends to propose to Plaintiffs an interim extension of the November 1995 schedule for several years during which the additional research would occur, and the Agency would review the progress being made in improving the certainty of the health and technology assessments and decide on appropriate further actions.

F. D/DBPs. As I previously reported, the proposed regulations for disinfection and disinfection byproducts were published on July 29, 1994 (59 Fed. Reg. 38668); we are now

receiving and reviewing public comments on the proposal. This proposal also met the requirement to publish findings of a review of total trihalomethanes ("TTHMs") (Amended Consent Decree in Civil No. 91-5549). Pursuant to the current Consent Decree, the Administrator is to promulgate final regulations for the D/DBPs by June 7, 1996 (i.e., 24 months after signature of the proposed regulations). It is clear that we will not be able to meet this schedule. Earlier, we had discussed with Plaintiffs a revised schedule of December 15, 1996, for promulgation of the D/DBPs regulations (and indeed included the December schedule in the Amended Consent Decree for the TTHMs). This December date reflected the regulatory negotiations that preceded proposal of this rule and the companion Interim Enhanced Surface Water Treatment Rule ("IESWTR").

However, we are still behind schedule on promulgating the Information Collection Rule ("ICR") due in part to the difficulties and complexities of developing and validating a testing method for Cryptosporidium, finalizing the data needed to develop models necessary for the IESWTR, and developing and validating a computer data base and associated software for the submission and analyses of data submitted by public water systems. Since the ICR is a critical milestone for the final D/DBP regulations, a revised schedule for the final rule is uncertain at this time. The schedule for publication of conclusions on the TTHMs analysis will need to be the same as the

schedule for promulgation of the final D/DBP regulations.

As indicated in Paragraph 5 above, the D/DBP rule and the companion ICR and ESWTR are high priority regulations for the Agency, and we plan to reassign additional staff to these activities as soon as possible. When we have developed a revised schedule for the D/DBP regulations, we will discuss that schedule with the Plaintiffs.

I declare under penalty of perjury that the foregoing is true and correct.

1-9-95
DATE

Robert Perciasepe
Assistant Administrator for Water
U.S. Environmental Protection Agency

5/15 A: 4C 3W
DC

STATE OF SOUTH DAKOTA

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May 11, 1992

The Honorable Thomas A. Daschle
United States Senator
317 Hart Senate Office Building
Washington, D.C. 20510-4103

The Honorable Larry Pressler
United States Senator
133 Hart Senate Office Building
Washington, D.C. 20510-4103

The Honorable Tim Johnson
United States Representative
428 Cannon Office Building
Washington, D.C. 20515-4101

Dear Gentlemen:

There are four environmental issues currently being considered either by a federal agency or the United States Congress which I believe could result in major adverse impacts on the state of South Dakota. Those issues are identified below.

ISSUE No. 1: The U.S. Environmental Protection Agency (EPA) first proposed, but is now willing to defer, promulgating an enforceable drinking water standard for sulfate.

PROBLEM: Sulfate occurs naturally in many of the ground water supplies used as drinking water in South Dakota. It does not have a permanent medical impact, only a short-term (24-hour) laxative effect. The South Dakota Department of Environment and Natural Resources (DENR) has advised me they know that 30 to 40 percent of South Dakota's water systems will not be in compliance with the originally proposed standard. DENR officials estimate capital costs to be $40 to $50 million in order to comply. EPA now agrees with this analysis (verified with both EPA Region VIII Administrator Jack McGraw, personally, and EPA Assistant Administrator for Water LaJuana Wilcher's office) and is willing to defer sulfate from the list. However, the Bull Run Coalition, which is suing EPA, opposes removal. South Dakota was very instrumental in convincing EPA to consider changing its position.

ACTION REQUESTED: Support the EPA in its efforts to defer sulfate from the "Phase V" Drinking Water Rules.

ISSUE No. 2: The EPA first proposed petroleum contaminated media (soil) be treated as hazardous waste and handled under Subtitle C, RCRA. However, EPA is now willing to defer all petroleum contaminated soil from those requirements where states have adequate regulatory programs in place.

PROBLEM: Currently, the EPA treats petroleum contaminated media as normal waste if it comes from an underground tank, but proposes to treat it as hazardous waste if it comes from anything other than an underground tank. Implementation of this interpretation will increase costs of cleaning up petroleum contaminated sites by a factor of ten. (In South Dakota, we are averaging $40,000 per site. We have 500 sites contaminated by other than underground tanks for an estimated cost of $200 million or 15 times the annual DENR budget). New York also has asked for an exemption for states which regulate above ground tanks. South Dakota also regulates above ground tanks, and we have joined in New York's request. The EPA now agrees with this analysis, and Assistant Administrator Don Clay has proposed to William Reilly the EPA grant the New York request.

ACTION REQUESTED: Support Don Clay in his efforts to treat all petroleum contamination the same.

ISSUE No. 3: The Boucher Amendment to HR 3865, the National Waste Reduction, Recycling and Management Act, would authorize towns which administer landfills to make final decisions about whether to accept out-of-state waste. States would have no say in the matter.

PROBLEM: I agree with the analysis of the Western Governors' Association (WGA) which found this provision wrong and unworkable. The WGA believes this proposed amendment may be unconstitutional. It is wrong from the philosophical standpoint that the states need to have this authority, and conflicts with other provisions of Resource Conservation and Recovery Act (RCRA) which require extensive state planning.

ACTION REQUESTED: Oppose Boucher Amendment.

ISSUE No. 4: Congress is considering two bills, SB 976 and HR 3865, to reauthorize the RCRA. ("Boucher" is an amendment to 3865.)

PROBLEM: In the area of solid waste, there are two issues which seem to be going against the states: (A) No ability to charge differential fees; and, (B) EPA required to approve state plans.

ACTION REQUESTED: More state authority to deal with solid waste needs to be built into both of these bills as follows:

(A) States must be in a position to make the final decisions regarding solid waste transportation, treatment, and disposal. They have the ultimate responsibility for what their towns and counties do, and they will have to deal with the long-term consequences. Additionally, my belief that states should make the decisions is part of a basic philosophical issue. Because I do not expect much, if any, federal financial assistance for states to deal with these problems, federal EPA plan approval and oversight requirements must be either none or very minimal.

(B) States should have the authority to treat out-of-state waste differently, if they wish. That should include charging differential fees and requiring different levels of compliance. But, the states should not have the authority simply to ban out-of-state waste. The latter position is not efficient, it is not a "regional solution to regional problems," and it will simply become a political football.

I hope you can follow through with the requested actions because I believe all of these issues have the potential to have major impacts on South Dakota.

If you have any questions with regard to these issues, please contact either Robert E. Roberts, secretary of the Department of Environment and Natural Resources, at (605) 773-5559, or myself.

Thank you for your time and consideration.

Very truly yours,

GEORGE S. MICKELSON

GSM:rrj

cc: William Reilly
Jack McGraw

FINAL REPORT

March 15, 1995

A REVIEW OF THE US EPA'S PROPOSAL TO SET AN MCL FOR SULFATES IN DRINKING WATER

by:

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This report was prepared on contract with the American Mining Congress

EXECUTIVE SUMMARY

The Environmental Protection Agency has proposed a National Primary Drinking Water Regulation including a maximum contaminant level (MCL) for sulfates in drinking water at 500 mg/l. After careful review of the scientific literature on the subject, we conclude that the proposed MCL for sulfate is scientifically and economically unsound.

The EPA has not considered all of the available data before proposing this action. There is insufficient scientific evidence on which to establish an MCL for sulfates in drinking water to protect the public from cases of diarrhea either in adult travelers or infants. There is no convincing evidence that sulfates in drinking water are causing a significant health problem in the United States even in areas endemic to high sulfates. There is convincing evidence that there are areas within the U.S. and other countries where very high sulfate water is consumed with no obvious ill effects.

With regard to the assumption that sulfates in drinking water cause diarrhea in some target populations, there is insufficient scientific evidence to determine an appropriate regulatory level of protection. One can form a hypothesis, which is consistent with the information available, that there is a sharp increase in the possibility of experiencing diarrhea in humans (not specifically infants) when consuming water with concentrations of sulfate (magnesium or sodium) close to 1,800 mg/l.

It is inappropriate for EPA to target the level of sulfates in drinking water as the single parameter on which to base any regulations with regard to protecting the public from cases of diarrhea. The total osmolarity (total ionic species) in the water is of greater importance than the sulfate content alone. It is not clear that cases of non-pathogenic diarrhea are caused by the level of sulfate in the water, per se, or that regulating sulfates would protect against this diarrhea.

There is no convincing evidence that infants are a sensitive group with regard to sulfates. The only report concerning infants was the three cases of infants who had recently moved into the area. They represent transients, rather than infants. The only rationale to consider infants as a special group is the possibility of diarrhea-induced dehydration. In this scenario, socioeconomic factors play a major role, and addressing this potential problem is not within the scope of a sulfate regulation.

There is only one scientifically designed and controlled human study of importance, in which 10 human volunteers were used; another part of the study by the same research team used 80 piglets. The human studies showed only mild effects and no self reported cases of diarrhea at the highest concentration tested, viz., 1,200 mg/l, and results were only statistically significant

when the data from two studies were combined. Although statistically significant, this finding may not be physiologically significant. The pig studies show an effect at 1,800 mg/kg and above. While the infant pig is accepted as a good model for human infants with respect to physiology, more work is required to properly extrapolate this dosage level to human infants.

The EPA also prepared an economic analysis as part of the background documentation for this sulfate MCL. Key assumptions of the EPA analysis are contrary to the direction of Executive Order 12866 and standard professional practice and are therefore unreasonable. These unreasonable assumptions lead to fundamental flaws in the analysis such that neither a decision maker nor the public can make an informed judgment on the rule.

One fundamental flaw in the economic analysis is the omission of remediation cost elements directly linked by law to MCLs. Such costs are many times larger than the costs reported by EPA in the proposed rule. The omitted costs of potential remediation at Superfund and other sites may range from about 600 million dollars to over 10 billion dollars annually.

A second fundamental flaw in EPA's analysis is the failure to develop a measure of the benefits of the rule based on standard professional practice. When EPA's data on the exposed population and "typical" benefits are adapted to a standard measure, the potential benefits of the rule decline dramatically. At best, moderate benefits result from implementation of the proposed standard. Estimates of the maximum potential benefits range from $7.3 million to $18 million annually for the 500 mg/l MCL level.

When the costs and benefits are compared, the costs may exceed benefits by billions of dollars per year at the sulfate MCL level recommended by EPA.

RECOMMENDATIONS:

1. The EPA should reconsider the immediate plan for promulgation of any sulfate standard in drinking water until (and if) adequate supporting data become available.

2. The EPA should conduct an economic analysis that is more consistent with the published direction of the Executive Office of the President. The direct links between MCL's, federal, and state laws should be addressed.

3. Further studies should be done with regard to unravelling the complex etiologies of non-pathogenic diarrhea, and identifying the factors and interactions involved.

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ABSTRACT

The Environmental Protection Agency has proposed a National Primary Drinking Water Regulation including a maximum contaminant level (MCL) for sulfates in drinking water at 500 mg/l [1].

There is insufficient scientific evidence to support issuance of an MCL for sulfates in drinking water to protect from cases of diarrhea either in adult travelers or infants. The EPA has been highly criticized, from within and without for not considering all of the available data before proposing this action. Infants may not be a sensitive group. Indicting high sulfates with regard to dehydration is inappropriate.

There is no evidence to suggest that the effects of high sulfates in drinking water should be considered in assessing any health effects other than acute diarrhea.

An analysis that allows the comparison of costs and benefits indicates that the actual costs may exceed benefits by billions of dollars per year at the sulfate MCL level recommended by EPA.

Setting this standard at any level under these circumstances is unjustified.

A. NATURAL SCIENCE ISSUES

Common risk assessment procedure for a chemical requires a thorough demonstration of the health effect etiology (cause and effect relationship) and a clear demonstration of a threshold dose. In the case of sulfates purported to cause diarrhea, the available literature does neither convincingly. It is unclear whether diarrhea, in this context, is solely the result of sulfate ions or the interaction of other ions present such as sodium and magnesium. There are only five relevant papers. These articles include: in 1968, a physician's observation of only three transient infants given water with high sulfates in their formula [2]; in 1951, the results of an admittedly flawed questionnaire [3], a recent (1994) though yet unpublished human study involving, in one case, only four volunteers, and in a second, six volunteers; a study using infant pigs as surrogates for infants [4]; and in 1992, another study with infant pigs [5]. The entire case for the intended action is based on this literature and apparently the 1994 study was not yet considered by EPA.

The case report on three infants was uncontrolled for other variables and importantly, all three had recently moved into the area indicating that they were transients. This study is the only study that is utilized to specify infants as a sensitive group.

study that is utilized to specify infants as a sensitive group. Additionally, there is no evidence that the elderly are a sensitive group.

There is only one scientifically designed and controlled human study of importance [4], in which 10 human volunteers were used; another part of the study by the same researchers used 80 piglets. For a condition such as diarrhea which exhibits large variability between individuals, a large sample size is necessary. The human studies showed only mild effects and no self reported cases of diarrhea at the highest concentration tested, viz., 1,200 mg/l, which were only statistically significant when the data from two studies of different design were combined. Although statistically significant, this finding may not be physiologically significant. The pig studies did show a frank effect at 1,800 mg/kg and above. The results of this study are supported by another independent publication [5] which gives greater credibility to their results. While the infant pig is accepted as a good model for human infants from a physiological standpoint, the extrapolation of dosages has not been clearly demonstrated. More work is required to extrapolate this dosage level to human infants. It has been recently noted that human infant studies are underway by the State of South Dakota and the Centers for Disease Control [6]. We are unaware of the scope and design of these studies, but any action should be delayed until these results can be analyzed. After a review, additional studies may be required.

One can, at this point, form a reasonable hypothesis (a suggestion to be tested) which is consistent with the majority of information, that there is a sharp increase in the possibility of experiencing diarrhea in humans (not specifically infants) in consuming water with concentrations of sulfate (sodium or magnesium) close to a level of 1,800 mg/l. More studies are required to satisfactory prove this issue.

The lack of published studies with regard to sulfates and diarrhea is, in itself, informative. If it were considered a significant problem, natural forces would have produced a large background of information, especially published case studies by physicians which can constitute up to one third of the articles in a medical journal. Consultations with specialists in pediatric gastroenterology and adult gastroenterology (including a physician practicing in a high ground-water-sulfate area) confirm that there is, at best, mild interest.

Further, there is ample information indicating that there are populations living in high-sulfate-groundwater areas (greater than 2,000 and up to 4,400 mg/l) and regularly drinking this water that do not have diarrheal problems of any magnitude. One might conclude that they have acclimated to the sulfates. However, there is not a single study or even supportable proposal for how this acclimation could occur physiologically. Perhaps this acclimation,

if real, is related to change in diet, lifestyle, etc. For example, fiber in the diet is known to produce a more firm stool. Again, if it were a significant health problem in the United States, there would be some clear indication of this, and there is not.

There is no indication in the literature that sulfates in drinking water should be considered for any other health effects than acute diarrhea.

B. ECONOMIC ISSUES

The EPA prepared an economic analysis as part of the background documentation for this sulfate MCL and specifically requested comments on the reasonableness of their assumptions. Several assumptions used in the analysis of costs and benefits are unreasonable. Key assumptions of the analysis are contrary to the direction of Executive Order 12866 [7] and standard professional practice. These unreasonable assumptions lead to fundamental flaws in the analysis such that neither a decision maker nor the public can make an informed judgment on the rule. One fundamental flaw is the omission of a category of remediation cost elements directly linked by law to MCLs; these costs may be several billion dollars annually. Such costs are many times larger than the costs reported in the proposed rule. A second fundamental flaw is the failure to develop a measure of the benefits of the rule based on standard professional practice. When EPA's data on the exposed population and "typical" benefits are adapted to a standard measure, the potential benefits of the rule decline dramatically but more importantly, the costs can be compared to the benefits.

The omitted costs of potential remediation may range from about 600 million dollars annually based on an aggregated approach to over 10 billion dollars annually using a disaggregated approach. The table below summarizes the results for the disaggregated approach. The estimates reported as "Annual Cost 1" are based on EPA's estimates of centralized treatment costs, the same technique that is likely to be used at a remediation site. "Annual Cost 2" figures are based on an external case study on the removal of sulfates at a large mining site. These estimates are based on an aggressive remediation approach.

REMEDIATION COSTS DUE TO SULFATE MCL*					
	EPA Assumption		Screening Estimates		
MCL Level	Sites	Cost	Sites	Annual Cost 1 (millions)	Annual Cost 2 (millions)
500 mg/l	0	0	22,100	$ 3,016	$ 12,426
800 mg/l	0	0	8,400	1,038	6,205
1,000 mg/l	0	0	5,300	590	2,085
2,000 mg/l	0	0	1,300	137	343
* For details: See Part B of this report					

In addition to remediation costs, some parties to groundwater and surface water pollution may be liable for natural resource damages under CERCLA, the Clean Water Act, or the Oil Pollution Act of 1990. Natural resource damage claims represent a potentially large cost that EPA has assumed to be zero. Such a cost may in fact be zero, but EPA should document this result after consultation with other affected state and federal agencies.

Several key assumptions used in the benefits analysis of the proposed rule are also not reasonable. EPA's assumptions do not allow the calculation of benefits in a manner that is consistent with standard professional practice. In part, this is because EPA has not provided sufficient information as directed by guidance for regulatory impacts provided by the Office of Management and Budget [8].

Standard professional practice would estimate the expected benefits by first calculating the cost of doing nothing, and then computing the cost savings that result from the regulation. The cost savings are identified as the benefits of the proposed rule. EPA's assumptions about the exposed population, the probability of illness, the probability of medical attention and the valuation of the cost of illness and plausible alternatives are described in Part B of this report. The results of this analysis are presented in Table 3, Part B, and show, at best, moderate benefits from

implementation of the proposed standard. This table provides both the marginal (additional) and the total benefits for several possible levels of the MCL. The maximum potential benefits range from $7.3 million to $18 million for the 500 MCL level and decline rapidly, reaching zero at 1,000 mg/l. The analysis is, however, necessarily built on a medical science link between sulfate ingestion, the potential for the diarrhea and the patient's behavioral choices. If these links are not established or valid, then the benefits may be substantially smaller or even zero.

In conclusion, EPA's assumptions about costs and benefits contain unreasonable elements. An analysis that allows the comparison of costs and benefits indicates that the actual costs may exceed benefits by billions of dollars per year at the sulfate MCL level recommended by EPA. Until EPA can substantiate its assumptions on the existence and magnitude of both the benefits and the costs as called into question in this report, the sulfate rule as currently proposed cannot be justified.

REFERENCES FOR ABSTRACT:

1. Federal Register, Vol 59, No. 243, Tuesday, December 20, 1994, p. 65578-65684. Specific questions for comment are listed on page 65599.

2. Chien L, Roberson H, and Gerrard, JW "Infantile gastroenteritis due to water with high sulfate content," Canad. Med. Assoc. J. (1968) 99: 102-104

3. Peterson, NL "Sulfates in Drinking Water," Official Bulletin of North Dakota Sewage Works, 18(10/11) (1951),

4. Heizer WD, Sandler RS, Seal E Jr., Murray SC, Gomez GG, Busby G, Schliebe BG and Pusek SN, Unpublished study, "The effect of sulfate in drinking water on intestinal function" (obtained from the American Mining Congress)

5. Veenhuizen MF, Shurson GC and Kohler EM, "Effect of concentration and source of sulfate on nursery pig performance and health," JAVMA, Vol. 201, No 8, October 15, 1992, p 1203-1208.

6. Testimony of Mr. Michael Banker, South Dakota Department of Natural Resources at the US EPA Hearing of February 2, 1995, p. 7

7. Executive Order 12866 of September 30, 1993, "Regulatory Planning and Review," Federal Register. Vol.58, No.190, Monday, October 4, 1993, p.51735-51744.

8. Regulator Impact Analysis Guidance, op.cit.

RECOMMENDATIONS AND CONCLUSIONS:

The US EPA has proposed setting a maximum contaminant level in drinking water for sulfates at 500 mg/l to protect the public from cases of diarrhea. This report deals with relevant natural science and economic aspects of the intended EPA action.

A team of experts from the University of Cincinnati and Dames and Moore Inc. have performed a critical review of the available literature and interviewed medical specialists, in addition to performing a thorough analysis of the economic impact of setting this standard. Our findings and recommendations follow:

RECOMMENDATIONS:

1. The EPA should reconsider its immediate plan for promulgation of any sulfate standard in drinking water until (and if) adequate supporting data becomes available.

2. The EPA should conduct an economic analysis that is more consistent with the published direction of the Executive Office of the President. Issues of omitted costs and estimated benefits should be addressed.

3. Further studies should be done with regard to unravelling the complex etiologies of non-pathogenic diarrhea, and identifying the factors and interactions involved. Studies on human infants which are in progress in South Dakota should be carefully reviewed.

CONCLUSIONS:

1. It is inappropriate to target the level of sulfates in drinking water as the single parameter to base any regulations with regard to protecting the public from cases of diarrhea. The total osmolarity (total ionic species) in the water is of greater significance than the sulfate content alone. It is clear that some cases of non-pathogenic diarrhea are caused by consumption of drinking water, but it is not clear that these cases are caused by the level of sulfate in that water, per se, or that regulating sulfates would protect against this diarrhea. Sulfates should not be considered for causing any other health effects than acute diarrhea.

2. With regard to the assumption that sulfates in drinking water cause diarrhea in some target populations, there is insufficient scientific evidence to determine an appropriate regulatory level of protection. The quality and quantity of the supporting information are lacking. At best, one can form a hypothesis, which is not inconsistent with the information

available, that there is a sharp increase in the possibility of experiencing diarrhea in humans (not specifically infants) when consuming water with concentrations of sulfate (magnesium or sodium) close to 1,800 mg/l. More studies are required to satisfactorily resolve this issue.

3. Sulfates do not cause dehydration. Dehydration is the result of a sequence of events that could start with diarrhea, among a multitude of other initiating events. These factors following this initiation are socioeconomic in nature and outside the scope of a regulation on sulfates in drinking water. A medical education program would be more appropriate.

4. There is no convincing evidence that sulfates in drinking water are, generally, causing a significant health problem in the United States even in areas endemic to high sulfates in drinking water. There is convincing evidence that there are areas within the US and other countries where very high sulfate water is consumed with no obvious ill effects.

5. There is no convincing evidence that infants are a sensitive group with regard to sulfates. The only report concerning infants was the three cases of infants that had recently moved into the area [Chien 1968]. They represent transients, rather than infants. There is no evidence to consider the elderly as a sensitive group. The only rationale to consider infants is the possibility of diarrhea-induced dehydration. In this sequelae, socioeconomic factors play a major role, and addressing this potential problem is not within the scope of a sulfate regulation.

6. Regulating the level of sulfates at the proposed level will create an enormous economic burden on the US population with little beneficial return. In addition to EPA's flawed analysis, a significant cost is omitted due to automatic incorporation of MCL's into other laws. An analysis that allows the comparison of costs and benefits indicates that the actual costs may exceed benefits by billions of dollars per year at the sulfate MCL level recommended by EPA.

PART A: NATURAL SCIENCE ISSUES

1. INTRODUCTION:

The Environmental Protection Agency is charged with protecting the environment. In this capacity, they are to analyze possible threats to the environment and provide appropriate legislation diminishing these threats. In many cases, the analysis aspect falls within a paradigm called human health risk assessment, a defined procedure. In the past, the strategy taken was to use worst case scenarios, laudably, to minimize errors in setting levels of a contaminant which might not be adequate to protect health. However, it is now realized by the scientific community and the public that this approach can go too far and deplete resources by treating one problem at the expense of another more important problem and can worsen the overall scheme of environmental protection. Currently, it is recognized that a "central tendency" rather than a "worst case" scenario should prevail.

The example treated here, viz. sulfates in drinking water purported to cause diarrhea, is a case in point. One critical issue here is that the problem is not clearly defined and the cause is not clearly delineated. It is not known if there really is a problem and if so the culprit is not known. Even if there was a problem, it pales in comparison with other public health problems that should be addressed. The database is minimal, and yet the proposal is to move ahead and implement a standard that will bring significant financial burden on the people of the United States. If the first step in performing a risk assessment lacks rigor, the rest of the steps lack meaning. It is clearly a mistake to move ahead in this way.

The EPA has issued a 90 day comment period on the proposed action. It is vital that they reconsider taking this action until (and if) data supporting this position are available.

In the following report, various aspects of this purported problem are discussed in detail.

2. SULFATES IN WATER:

The sulfate ion is a naturally occurring anion, a negatively charged entity which can exist in solution when balanced by the cation, a positively charged ion. The sulfate ion (SO_4^{--}) is doubly, negatively charged requiring, as examples, two sodium ions or one magnesium or calcium ion to balance the charge.

Sulfates are present in the crust of the earth in varying amounts. Due to weathering and leaching processes, they occur naturally in groundwater. Only small amounts of sulfates are added to the groundwater from precipitation in urban areas. Some sulfates are added as a result of industrial or agricultural practices.

Once present in the groundwater the sulfates, for the most part, remain as a salt. Small amounts are naturally removed by electronic reduction, incorporation into biomolecules in the human body, or by precipitation of the solid salt (the cation and anion bound species) into sediments.

3. HUMAN EXPERIENCE WITH SULFATES:

Environmental Experience:

In many areas of the world, very high values of sulfates are routinely consumed with no indication of a problem with diarrhea.

There are several articles in the scientific literature dealing with situations where high sulfates were introduced into groundwater by pollution emergencies. It is virtually impossible to separate the effect of sulfates from the many other factors involved in these cases.

One very drastic case is in British Somaliland and surrounding areas [Macfadyen 1953]. In this area there is a huge deposit of gypsum/anhydrida roughly 1,000 feet in thickness and extending over some 27,000 square miles or more. Wells in this area indicated between 2,000 and 4,400 parts per million (mg/l) of sulfate. In the village of Eik in Somaliland Haud, the well water was 4,400 ppm sulfate ions with a total dissolved solids of 10,000 ppm. It is important to note that water in this area is very scarce and precious to the extant that wells are fitted with padlocked trap doors. It seems reasonable that they use the water for drinking and there is no indication that people living here suffer from a chronic osmotic diarrhea. This level is almost 9 times higher than the proposed EPA standard of 500 mg/l.

The Military:

The military has promulgated a standard of 100 or 300 mg sulfate/l based on a consumption of 15 or 5 liters/day. This would be similar to an acceptable concentration of 750 mg/l when back calculated for the standard consumption of 2 liters/day. It is obviously important to the military that troops not be incapacitated by the onset of acute diarrhea. The military population is a relatively well-monitored population, and it is likely that this level is protective in practice.

Other Regulations:

The World Health Organization, in European standards, set a sulfate limit of 250 mg/l based on taste. In its guidelines for drinking water quality, 1984 [WHO Guidelines], they recommend a level of 400 mg/l for aesthetic quality (taste). Further, they state that water containing high sulfates can have a laxative effect, which is enhanced when the sulfate is consumed in combination with magnesium. Further they state that, "Water containing magnesium sulfate at levels about 1,000 mg/l acts as a purgative in adults, while lower concentrations may affect new users and children. In the 2nd edition, they indicate that, "As sulfate is one of the least toxic anions, no health-based guideline value has been derived. "No health-based guideline is proposed for sulfate. However, because of the gastrointestinal effects resulting from ingestion of drinking water containing high sulfate levels, it is recommended that health authorities be notified of sources of drinking-water that contain sulfate concentrations in excess of 500 mg/l. The taste threshold for sulfate in water is between 300 and 400 mg/l. However, this varies according to the cation present.

Canada and many of the US States have legislated sulfate standards based on taste.

Human and Animal Information:

Children are unique when considering exposure assessment. Differences in both uptake per unit body weight and pharmacokinetic behavior can result in different effective doses, even at constant concentrations of chemicals. Infants consume about four times more food per body weight, and three times more water per body weight in a day than do adults. In terms of drinking water sulfate ingestion, it is not known whether the increased food intake may offset the effects of increased amount of sulfate ingested in drinking water. Although not determined for sulfates directly, it is known that inorganic elements are absorbed with greater efficiency by the young of all species than by adults. In humans, enhanced absorption apparently lasts from parturition to puberty, while in most animal species, enhanced absorption lasts only from parturition to weaning.

If sulfates can be included in this phenomenon, this may indicate a problem with using post-weanling pigs for human infant surrogates in sulfate drinking water experiments.

Growing pigs have been used as models for both malabsorptive and secretory diarrhea; it should be noted that the studies examined pathophysiological mechanisms of diarrhea only-nonpathogenic causes of diarrhea were not addressed. The growing pig can also be used as a model for the human infant when considering the effects of age, sex and diet on the rate of growth

and body composition during infancy. In terms of the digestive system physiology, the pig clears non-digestible particles in the food quicker than humans. Age of the pig (both in terms of the study itself, and in terms of the age at weaning) can make a considerable difference in the rate of food passage through the alimentary tract. These factors should be considered when planning and reviewing experiments using the pig as a model for infant diarrhea.

4. DIARRHEA

The causes of diarrhea are many and varied, including viruses, bacteria, protozoans, worms, osmotic agents, change of diet, and even psychological distress and problems (personal communication, practicing gastroenterologists).

Mankind has known diarrhea for a long time. The definition still presented in the medical dictionary is that of Hippocrates (500 to 451 BC) [Medical Dictionary], that is, an abnormal frequency and liquidity of fecal discharges. The medical dictionary defines numerous types of diarrhea in some cases relating to the appearance and longevity of the occurrence and in others with regard to the etiology, for example, morning diarrhea, serous diarrhea, infantile diarrhea, summer diarrhea, etc. A recent study by Heizer [Heizer 1994] (discussed later in detail in this review) attempted a three parameter scientifically rigorous definition of diarrhea, viz: 1) patient-diagnosed, 2) quantity of stool/day (> 250 g), 3) number of stools/day (>3). (There is no justification given for this definition in the paper and none was found in the literature.) It appears that everyone has a unique expectation of the property of their stools, and the nature of same varies over a wide range. Pediatricians spend a good portion of their time dealing with the nature of an infant's stool. Generally, they consider it a cosmetic problem rather than a disease factor, but the parents often require some modest intervention.

Another definition used by physicians in regard to diarrhea etiology is "infectious or secretory", but the terms overlap. Secretory diarrhea is caused by an excessive secretion of body fluid into the lumen of the intestine. By far, the overwhelming cause of medically serious diarrhea is caused by infectious agents which invade the mucosa of the intestinal tract and cause some disfunction, or cause a disfunction while exerting their primary effect elsewhere in the body.

Within the definition of secretory diarrhea lies osmotic diarrhea [Field 1980]. Osmotic diarrhea is the type of diarrhea presumably manifested by excessive levels of sulfate. Simply stated, osmolarity defines the total state of a solution with regard to ionic species (charged ions). The body tries to maintain the composition of the contents of the intestinal tract at the same

osmolarity as the interstitial fluid. When fluid is taken into the digestive tract orally, there is an interchange of ions and molecules, and depending on a multitude of factors, including the absorbability of the ions and the transit time (the longer the time the more watery the stool), a stool of appropriate consistency is produced. With ionic species that are relatively poorly absorbed, such as sulfate and magnesium, the body will not absorb as much of the water associated with the dissolved materials, and a watery product, diarrhea, may occur. Whether this happens or not is also a function of the time for all this to occur (the transit time). Obviously, the system is highly complex. A definitive diagnosis of osmotic diarrhea can only be made by determining the osmolality of the stool. (Unfortunately, this was not one of the parameters examined in the most definitive study of this issue [Heizer 1994]).

Only in cases where the osmotic diarrhea is ignored for a period of time can complications occur, namely dehydration due to loss of bodily fluids. This sequela can be serious and life threatening, especially for infants. However, it is believed that the patient, or parent, changes some life style component or makes some other adjustment and recovers quickly. With infants, with small body masses and large liquid requirements, dehydration can occur rapidly. Unless the parents delay presenting the infant for treatment for an extended time, recovery in the hospital is likely.

It is admitted that many cases of diarrhea are ignored, self treated or treated by a physician without knowing the cause. When presenting a patient, especially an infant with parent-diagnosed diarrhea to a physician, the physician will require additional information before making any judgement. This information relates to, among other data, the general health status of the patient, e.g. his/her skin turgor and color, food consumption, etc. The physicians generally seek, first, to find whether the patient is "really sick" or if they "just have a case of diarrhea." In the latter case, physicians may consider this a "cosmetic" effect rather than a sign of disease. Even with infants, if the degree of diarrhea is not excessive or has a longevity, and there is no other significant signs of ill health, the physician will recommend non-prescribed remedies. Generally, this corrects the problem, or it corrects itself.

In our discussions with a practicing gastroenterologist (Dr. Giannella), we considered a number of hypothetical scenarios involving exposure to "high sulfates." In one scenario, a traveler passing through a high sulfate area would get a case of diarrhea. It would come on quickly and resolve quickly (hours). If the traveler continued to drink water containing high levels of sulfate, that person might get another case which would have the same effect. Generally, the traveler would modify either an eating habit or a drinking habit to avoid further occurrence. It would be unusual in this case for the person to need to seek medical attention under this scenario.

5. COMPENSATION:

Much of the literature talks about human compensation for high sulfate drinking water. However, no study or substantiate hypothesis for the supposed physiological phenomena involved, which takes about two weeks, has been found. Certainly, compensation occurs in many biological systems including transport systems, but this occurs quickly.

If compensation does not exist, it would be difficult to explain why residents of high-sulfate-drinking-water areas do not have chronic diarrhea? Either there is compensation or there is no problem. One suggestion is that there is compensation in the form of lifestyle, eating regimens, etc. This seems likely. Residents may unconsciously adjust their diet, etc. to the conditions of their area.

6. THE SCIENTIFIC LITERATURE

The database for sulfates and diarrhea is inadequate to form any firm conclusions. However, if one gives enough of almost any chemical, an effect can be realized. The database is not inconsistent with a hypothesis (a proposal to be proven) that there is a sharp increase in the possibility of experiencing diarrhea in humans (not specifically infants) when consuming water with concentrations of sulfate close to 1,800 mg/l. More studies are required to satisfactorily prove this issue.

a. SUMMARY OF PERTINENT LITERATURE:

i. A physician's observations on only three cases of infant diarrhea. In addition to the small sample size, there was insufficient evidence precluding the possibility of causality from agents other than sulfates. This paper can only be considered useful in scientific hypothesis development, i.e. it proves nothing. Also, importantly, all of the cases of infants were transients besides being infants. We have found no study that involves resident infants. The idea, carried through and throughout this rulemaking, is that infants are a sensitive population. Perhaps this is a fallacy [Chien 1968].

ii. The results of a questionnaire to residents of North Dakota, who have wells, requesting information on self-diagnosed laxative effects. The number of respondents to the questionnaire was small. The author admits that there was considerable misunderstanding of the questions and that some of the data points are questionable. [Peterson 1951] [Moore 1952]

iii. An unpublished but carefully controlled laboratory experiment with only 4 human volunteers. In this study, the sulfate content of the drinking water was gradually increased

in two-day increments from 0 to 1,200 mg/l which produced no indication of diarrhea. Considering the variability in the population of this response, the sample size of 4 does not represent a definitive study, but suggests that 1,200 mg/l sulfate is not causing diarrhea [Heizer 1994].

iv. A carefully controlled laboratory experiment with 6 human volunteers. In this study, the volunteers drank water containing sulfate at 0 mg/l for 6 days, followed by a six-day period with 1,200 mg/l. Although by pooling the results of the above study, a statistical relationship was shown, it is questionable whether there is any biological significance. [Heizer 1994]

v. A carefully controlled baby pig study (a model for infants) with 80 piglets given 0, 1,200, 1,600, 1,800, 2,000 and 2,200 mg/l sulfate in their formula. This was a well designed and performed study and piglets are considered good models for infants and the sample size was adequate. Formula made with 1,800, 2,000 and 2,200 produced significant diarrhea but 1,600 had only a slight effect with regard to soft stools and lower concentrations had no effect. This is the most definitive study and suggests to us that formula made with 1,800 mg/l could cause diarrhea in human infants (or just humans).

b. DEARTH OF PUBLISHED ARTICLES:

The dearth of published studies is significant in itself. If sulfate induced diarrhea was a serious problem, one would expect numerous published studies. It is clear that there is little interest by the scientific and medical community in this "problem," presumably because few believe it to be important or real. The former concept was borne out by our discussions with the practicing gastroenterologist and two pediatric gastroenterologists, one practicing in a high sulfate area of South Dakota.

c. DETAILED REVIEW OF RELEVANT PAPERS:

Below, each paper is reviewed independently.

CHIEN STUDY [Chien 1968]

Case reports are the result of astute clinicians who identify an unusual feature of a disease or a patient's history which may lead to a formulation of a new hypothesis [Hennekens 1987]. Case reports are among the most common types of studies published in medical journals, accounting for over a third of all articles in one systematic review [Field 1980]. These observations can result in a hypothesis. Routine surveillance of accumulating case reports often suggests the emergence of a new disease or epidemic. Generally, after the hypothesis is formed, an analytic study can be

done to compare the experiences of the case series with that of a group of individuals who did not develop the disease to identify possible causal factors. While case reports can be very useful, one fundamental limitation is that it is the experience of only one person, the physician. They generally lack a control group for appropriate comparison. This lack can either obscure a relationship or suggest an association where none actually exists. Usually, this type of information can only "raise the question."

The Chien study suffers from the above problems in addition to a sample size of only three. In addition, other causes of the diarrhea were not ruled out. It seems clear that the water caused the effect, since the effect stopped when the water was changed, but not that the sulfates in the water caused the problem.

This paper is frequently cited to indicate that newborns may have problems from drinking formula prepared with water with high sulfate levels. No other case reports of comparable problems have been found in the literature, especially in the more recent literature, after changes in infant formula and other conditions since this article was published. Three infants exposed to drinking water with levels of sulfates of 720, 1150, and 630 mg/l are described. The water they consumed was described as boiled raising the possibility that the water actually consumed by the infants had higher concentrations of sulfates (and other constituents) than the water in the drinking supply. Only the sulfate content is considered important although there are other potential sources of hyperosmolarity in the water. Importantly, each of the three children described was a migrant into the area in which the diarrhea occurred. There are no reports of children reared in one of these areas having problems with diarrhea. Based on this paper, therefore, the category of concern would be better characterized as "migrants" rather than "infants."

In summary, this paper is unconvincing because other sources of the diarrhea are not ruled out, because it is unique in the literature and because all three of the infants cited are in the minority of infants who moved into the area.

PETERSON (MOORE) STUDIES [Peterson 1951][Moore 1952]

A brief 1952 report by Norman L. Peterson, sanitary engineer for the State Department of Health in Bismark, North Dakota titled "Sulfates in Drinking Water" provides some information for discussion. The report dealt with the question of "whether or not this water (ground water supplies in North Dakota) had a laxative effect on people using it, especially those not acclimated to the water."

Out of some "2000 to 2500 completed questionnaires and chemical analyses of underground water samples in this department at the present time", only 300 had a proper response to the

question of laxative effects of the water. Peterson states that "the U.S. Public Health service standard for sulfates (stated as 250 parts per million or P.P.M.] may be considerably lower than can be tolerated in everyday usage."

Peterson graphs the amount of sodium sulfate on the horizontal axis of a graph and the magnesium sulfate on the vertical axis. He then shows with a dot water that was reported to be a laxative by the consumer and with a cross a water that does not have that effect. His conclusion was that over "750 P.P.M. sulfates is generally a laxative water and below 600 P.P.M. sulfates would be considered safe."

There are a number of problems with the Peterson data with respect to using it to set a standard. Peterson should be congratulated for giving us additional data and conclusions to better understand the sulfate in drinking water situation. He apparently did an excellent job with the information available and showed that the level for regulation was too low. However, this is not a currently acceptable scientific study and the report should not be treated as such. A current reviewer should not place too much emphasis on the data from this research effort because of important flaws.

Peterson does not indicate any other sources of sulfates such as calcium sulfate on the graph so we do not have an actual sulfate level in the drinking water, only sulfates from two compounds. Total sulfate levels may have been higher. As an alternative the data were read by us from the graph, as well as possible, and the minimum total sulfate level was calculated by adding the levels of sodium sulfate and magnesium sulfate as explained below.

A major concern with this research is the bias in the data reported. Only one in seven or one in eight of the reports filed in North Dakota were actually used in the graphical analysis because the information on laxative effects was not available. We must then ask whether the 300 samples could be considered a representative sample of the waters in the data files and the related health effects and whether the laxative effects in the reports in the files would be representative of the waters in the state. Typically, in questionnaire research, those with an extra interest in the subject are the people most likely to respond to a particular item. Thus the reports in the files may over-represent the laxative effect. Moreover since most diarrhea is thought to be caused by a microbe, there is no evidence that a reported laxative effect was actually due to the sulfates in the drinking water rather than by a bacterium, protozoan, or other life form in the drinking water.

While Peterson states that "about 300 (of the questionnaires) were completed to the extent that they could be used for the data desired", an actual count of the points on the graph shows only

about 120 points. Thus possibly some of the points really represent more than one questionnaire or Peterson only graphed some of the information available. Alternatively a majority of the questionnaires did not have the three items of information necessary to create a point on the graph, i.e, laxative effect, sodium sulfate level, and magnesium sulfate level. The inescapable conclusion is that the graph shows data from only 5% to 6% of the questionnaires in the North Dakota files, a proportion so small that possible effects of biased reporting (presumably inadvertent bias) preclude drawing any strong conclusions from this graph.

Peterson recognizes the problem of validity in the data with the statement that some of the points which do not fall into a laxative or non-laxative zone "are so obviously in error that they should be disregarded."

In conclusion, Peterson presented data indicating that the level could be "500 P.P.M. and still have no physiological effect on persons using the water for any length of time." We see that the likely biases in the data indicate that the true no physiological effect level is likely to be considerably higher than 500 ppm.

A new analysis of the Peterson data was carried out. Any number of different models could be applied to the data to relate increasing doses of sulfates with an increasing frequency of laxative effect. Since the shape of this dose-response curve is not known, any such curve fitting could be subject to bias. Therefore a straightforward nonparametric analysis was calculated. The 120 points in the graph were reproduced as well as could be estimated from a copy of the Peterson graph.

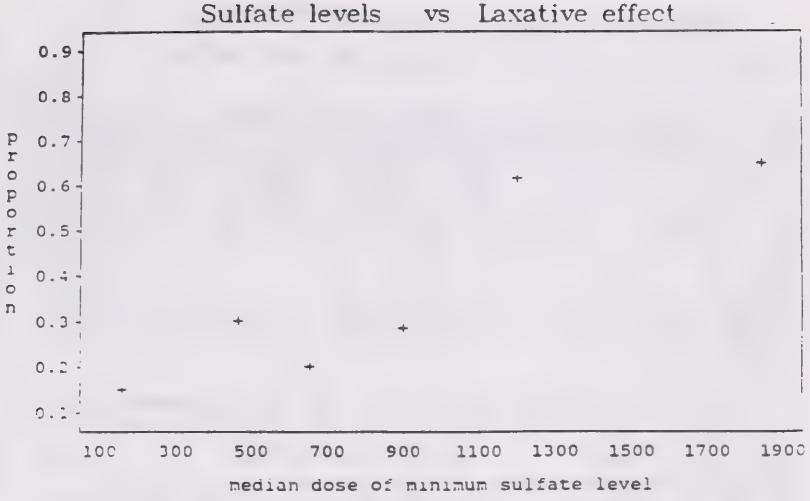
A variable was created that was the sum of the magnesium sulfate and the sodium sulfate levels. This variable was the minimum possible value for the total sulfates in each of the waters since other sulfate compounds are not included. Then 6 groups of 20 points each were created based on ascending values for the minimum total sulfate levels. The rate of reported laxative effect for each group of 20 was calculated. The value 980 was at one boundary between groups with one such point in the fourth unit and two points in the fifth unit; two of these points were for laxative effect and one was not so two-thirds of a person was credited to the fourth group and one and one-third to the fifth group.

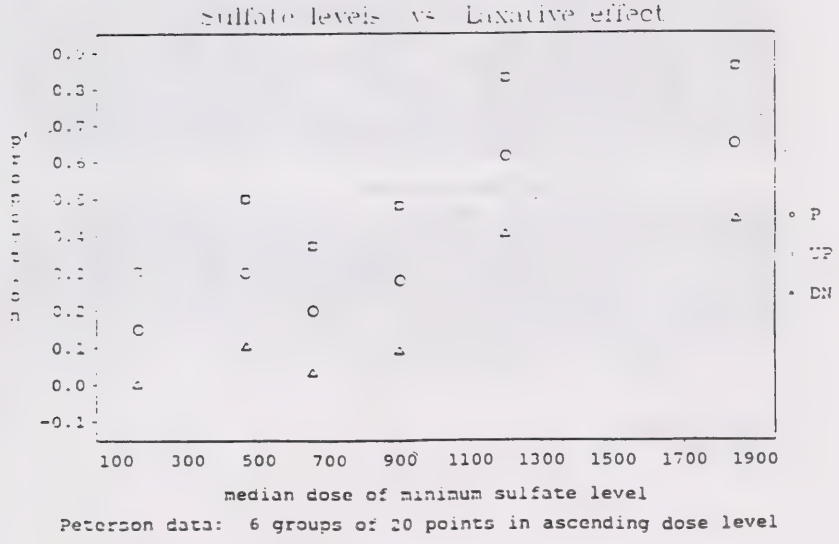
The data show that there is a 20 to 30 percent "background" rate which presumably reflects the over-reporting in this type of questionnaire information and consists of some of the points that Peterson characterizes as "obviously in error." Between about 900 and 1200 ppm sulfate, there is a considerable increase in the rate of laxative effects. If one were to take account of the biases in the Peterson data, both in reports of laxative effect and in the

total sulfates in the drinking water, a harmless level is likely to be around 1800 mg/l.

One should also note that there is considerable variability in the precision of these estimates as could be shown for example by 95% confidence limits on the estimates. The variation in confidence limits takes into account only the statistical variation and not the additional and considerable problems of bias in the data.

The following figures illustrate the above analysis


Sulfate levels vs Laxative effect
proportion
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
100 300 500 700 900 1100 1300 1500 1700 1900
median dose of minimum sulfate level
Peterson data: 6 grups of 20 points in ascending dose level


Sulfate levels vs Laxative effect
0.3
0.7
0.6
0.2
0.1
0.0
-0.1
100 300 500 700 900 1100 1300 1500 1700 1900
median dose of minimum sulfate level
Peterson data: 6 groups of 20 points in ascending dose level
P
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HEIZER STUDY, A Controlled Experiment [Heizer 1994]:

This paper presents findings on two human and two infant pig studies.

This investigation is the most definitive of all available studies. It is an unpublished study by Heizer et al. performed at the University of North Carolina, School of Medicine, Chapel Hill, NC, under a grant from the US Environmental Protection Agency. Published literature in peer reviewed journals carry greater credibility than unpublished papers. The report was obtained from the American Mining Congress (AMC) in January 1995. However, an abstract was published in April 1994 as discussed below. (Abstracts are generally not peer reviewed.) We have no assurance that the document provided by the AMC is in final form for submission to a peer-reviewed-journal. In fact, for the pig studies, more information would probably be required by reviewers. We assume that the authors will submit one or more papers for publication.

While this study is insufficient for use in establishing a regulatory level it shows clearly that the proposed 500 mg/l level is totally inappropriate. The sample size was too small for the human study, and the dose ranges were too low. The findings provide a basis for design of a larger more definitive study. In the AMC provided paper, the background information on the pig study is insufficient although the study appears to be well designed and performed.

In addition to the review of the University of Cincinnati and Dames and Moore (UC-DM) team, Dr Giannella and Dr. Cohen, a gastroenterologist and a pediatric gastroenterologist practicing at University Hospital (Univ. Cincinnati) and Children's Hospital (associated with the Univ. of Cincinnati) performed a general review and discussed their findings with the UC-DM team. In general, this study is well designed and apparently well carried out. The investigators have scientifically studied the potential effects of sulfates in the drinking water in controlled conditions including keeping the diet and water consumption constant.

With regard to the EPA's proposal to set the MCL at 500 mg/l, the first paragraph of the paper indicates that "Uncontrolled observations suggest that the presence of sulfate in drinking water may have a laxative effect in adults at levels above 750 mg/l and may cause diarrhea in infants at levels above 600 mg/l (emphasis here only)." The authors did not even begin with the hypothesis that 500 mg/l would cause an effect but did not provide a reference for this comment.

DEFINITION OF DIARRHEA

For the human studies, the authors proposed three definitions of diarrhea, viz., 1) self-reporting, 2) more than 250 g of stool/24 hours and 3) more than 3 stools are passed/24 hours. References for the selection of these values were not given, nor did we find a reference in the literature for these values. They also measured transit time (mouth to anus) with an orally delivered dye. They did not provide a cutoff value for a definition of diarrhea with this parameter, nor have we found one in the literature. It is unfortunate that stool osmolarity was not measured as this is definitive of osmotic diarrhea and would have added potentially useful information.

HUMAN STUDIES

All reasonable controls were designed into the study. One parameter difficult to control was the diet. Food was prepared by the hospital according to the individual volunteer's average caloric intake. However, the meals were not necessarily the meals to which they were accustomed. This may add some variability to the results, as a change in diet can cause diarrhea.

First Study

The first human study (called a Dose Ranging Study) could be considered a simulated gradual increase in sulfate content of one's drinking water. They utilized only four human volunteers. Six concentrations of sulfate in drinking water were used; 0, 400, 600, 800, 1,000 and 1,200 mg/l. The volunteers spent 12 days on a constant diet and constant fluid intake of 36 ml/kg/day (including the sulfate dose). This is a high value (two standard deviations) from the mean daily consumption of drinking water based on their reported survey. Every two days the concentration was increased in the increments noted above. Of all the parameters examined, only transit time showed a trend-decrease, with no one reporting diarrhea and no other statistically significant findings.

Second Study:

In the second study with six human volunteers, the subjects were investigated under the same controls, but during the first six days the drinking water contained no sulfate and during the latter six-day period the water contained 1,200 mg/l sulfate. In this study, water containing 1,200 mg/l compared to none produced a statistically significant (P=.03) increase in mean stool weight/6 day pool with no difference in number of stools, transit time, and no one reported a decrease in stool consistency. Changes of this magnitude are well within changes resulting from alterations in the

diet, particularly increasing the fruit and vegetable content of the diet as recommended by many authorities as a more healthy diet.

Combined Data (First and Second Study):

To improve the statistical power of the study, the study results from the two studies were combined for the 0 and 1,200 mg/l groups. When this was done, there was a statistically significant decrease in stool consistency and transit time at 1,200 mg/l. The two study designs were quite different, and the volunteers on the first study were only on zero sulfate water for two days, while in study two, they were on zero for 6 days and 1,200 for 6 days. Combining these results in this way weakens the observed association from a design standpoint.

With regard to the proposed measures of diarrhea, the following table is provided. Conclusions from this data are not apparent.

The table below was prepared from the text of the article.

TABLE OF DATA FOR HUMAN STUDIES						
	Sulfate Concentration in Water					
	0	400	600	800	1,000	1,200
Study 1, 4 subjects						
Self reported	no	no	no	no	no	no
Stool weight	no	no	no	no	no	no
Number of Stools	no	no	no	no	no	no
>250 g stool/24 hr	1/4	1/4	1/4	1/4	2/4	2/4
>3 stools/24 hr	0/4	0/4	0/4	0/4	0/4	0/4
Reported abd. cramps	1/4	0/4	0/4	0/4	0/4	0/4
Study 2, 6 subjects						
Self reported	no					no
Stool weight	-					Incr.
Number of stools	no					no
Transit time	no					no
>250 g stool/24 hr	no					3/6?
>3 stools/24 hr	no					no
Reported abd. cramps	no					2/6
Combined						
Stool weight	-					Incr.
Transit time	-					Decr.

The conclusions by the authors mentioned in the summary are: "...water containing 1,200 mg/l sulfate (as Na_2SO_4) produced mild but statistically significant increases in stool weight and decreases in self-reported stool consistency and (decrease) in intestinal transit time in normal adult subjects...water containing 1,000 mg/l had no effect."

Statistical Considerations:

Rather than the patterned allocation used, some might have preferred a random allocation of the doses in the study, but only one study can be done at a time. The study as done by the authors addresses most of the questions asked.

The other major consideration is whether the results from this study can be generalized. A sample of 10 persons does not yield the array of variability likely to be encountered in the pattern of biologic effects anticipated in a population. Technically, the 95% confidence limits on the average results are quite wide for a sample size of 10. Note the uncertainty is reduced by the square root of the sample size so it would take an experiment four times as large to reduce the uncertainty or variability in half.

Conclusion:

A reasonable conclusion would be that they did not give a high enough dose (at 1,200 mg/l) to obtain a frank effect. The only factor shown, cleanly, at a statistically significant level was the stool weight in the second study.

We note that changes in food and water consumption may be partially responsible for the adjustment that people make to different levels of sulfates and perhaps solutes in their drinking water such that residents do not complain of diarrhea from sulfates in their drinking water.

The Abstract, April 1994:

An abstract of the human information was published in April 1994 Intestinal Disorders [Heizer 1994-abstract]. The conclusions stated in this abstract are:

> "We conclude that in ten normal subjects sulfate in drinking water containing 1,200 mg/l higher than concentrations encountered in US municipal sources, caused measurable but clinically insignificant [emphasis here only] increases in stool mass and decreases in stool consistency and transit time, but no change in stool frequency".

For comparison, the paper received from the American Mining Congress the conclusions dropped the "clinically insignificant phrase", i.e.:

"...water containing 1,200 mg/l (as Na_2SO_4) produced mild but statistically significant increases in stool weight and decreases in self-reported stool consistency and intestinal transit time in normal adult subjects.

THE PIG STUDIES:

Two pig studies were reported in the Heizer document (not in the abstract mentioned above).

The author's conclusions were **"In infant piglets, 1,200 mg/l had no detectable effect but 1,600 mg/l caused a slight increase in the number of soft and liquid stools.**

Both experiments utilized 40 infant piglets with four treatment groups. Sodium sulfate concentrations which were 0, 1,200, 1,600 and 2,000 mg/l in the first experiment and 0, 1,800, 2,000 and 2,200, in the second, were mixed with the powdered formula. The piglets were fed by an auto-sow for 16 days, and then sacrificed.

Parameters studied were grouped as:

Feces consistency (1=normal, 2=soft and 3=liquid)
Feed scores (1=normal, 2=off feed, 3=not eating, V=vomiting)

Criteria for assigning these scores is not given. One assumes that it is the judgement of the observer which could lead to some bias.

According to the authors, sulfate had no effect on normal weight gain for either study. Formulas made with 1,200 mg/l sulfate had no effect, 1,600 caused slightly more soft and liquid stools and with 1,800, 2,000 and 2,200 there was significant diarrhea.

The data are presented only in graphs (no tables are given) which show the proportion of pigs with the feces consistency score (graded as shown above). For the first experiment, the graphs show that even in the zero sulfate group, there was a 20-30% prevalence of soft or liquid stools for the first 11 days (of a total of 18 days on study). For the first experiment the graphs show that with 2,000 mg/l the proportion of normal stools remained high for two days before dropping over about 7 days to none.

In the second experiment where only the dosages were changed, there was a cyclic occurrence (0-10%) of soft stools in the zero sulfate group. In the second study, with 1,800 mg/l it seemed to take more than 2 days for the drop in frequency of normal stools, with a recovery up to 60% at about 7 days and continuance at this level throughout the rest of the experiment. In the second

experiment, with 2,000 and 2,200 the proportion of normal stools dropped precipitously in the first day.

One interpretation of the data would be that the level where diarrhea became evident was closer to 1,800 mg/l than 1,600 mg/l.

Although a better analysis could be made if we had the raw data, we believe that the study shows that the infant pigs did clearly respond to the experimental procedure, exhibiting diarrhea at about 1,800 mg/l sulfate and above. In the next section we discuss another pig study by Veenhuizen. Our conclusion regarding the Veenhuizen paper is that there is a steep dose-response relationship as we approach the 1,800 mg/l level which is consistent with these findings and also with our interpretation of the Peterson paper discussed above [Peterson 1951].

The major criticism concerns the criteria developed for assigning the values to the stool-consistency parameter. One can wonder why the criteria used in the human study were not applied to the pigs or whether pigs are different enough in the expression of diarrhea that this is not appropriate. If the latter is so, then what is appropriate? We have not found any information in this regard in the literature.

THE VEENHUIZEN PIG STUDY [1992]:

The Heizer unpublished study is supported by an independent published study by Veenhuizen. This study was performed over 28 days on 415 weaned pigs who were provided, in their drinking water, 600, 1,200, 1,800 mg/l sulfate compounds (magnesium or sodium).

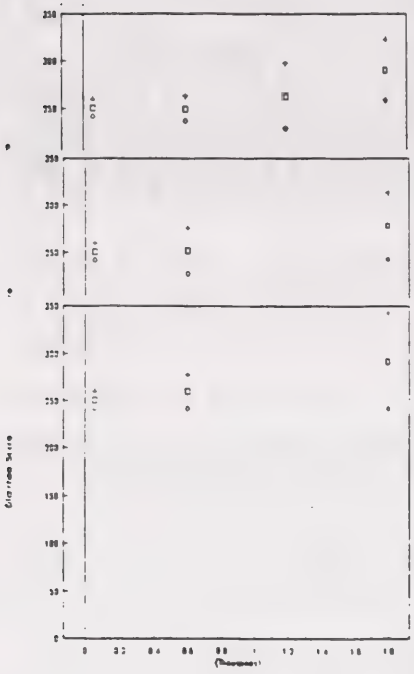
The author's conclusion states: "Except for an increase in fecal moisture content (not associated with pathogenic diarrhea), concentrations of up to 1,800 mg of sodium, magnesium, or a combination of sodium and magnesium sulfate/l had no adverse effect on nursery pig performance."

As with the Heizer study, diarrhea was judged subjectively and grouped into three categories, viz: 1=firm, 2=loose, 3=watery. There was an attempt to reduce observer variation using (randomly assigned (?)) one of three observers. The data regarding diarrhea are given in a figure in the paper (Figure 2) and described as follows: "Increased prevalence of diarrhea was a trend as sulfate concentrations increased. Pigs given an increasing concentration of the combination of magnesium and sodium sulfate (600, 1,200 and 1,800 mg/l) had a significant (P=0.027) difference in prevalence of diarrhea between treatments. Pigs given higher concentrations of sulfates had greater prevalence of diarrhea throughout the trial period."

Reviewer's Conclusions:

We have replotted the figure provided in the paper (Figure 2) indicating both error bars (one standard deviation from the mean value?). The figure shows that the variability is very large. Looking at our figure (next page), it seems reasonable to alternatively conclude that there could be no effect at levels of 600, 1,200 or 1,600, with a steep increase at 1,800 mg/l, i.e. the dose-response curve begins a steep climb (almost a threshold effect) as it approaches 1,800 mg/l. This interpretation is consistent with the significant trend analysis performed in the Veenhuizen paper. Further, this interpretation is consistent with our interpretation of the Heizer pig studies discussed above. One might compare this chart with the one presented with the discussion of the Peterson [Peterson 1952] study.

Veenhuizen 1992 Data Replotted, Diarrhea Score vs. Dose, showing error bars



7. RISK ASSESSMENT

The general procedure in performing an EPA type risk assessment [Risk Assessment Guidelines for Superfund] for a non-carcinogen is to first determine the critical effect. In this case the critical effect is already defined as diarrhea. Then information is obtained and evaluated until a clear dose-response curve can be produced. Ideally, information is available to investigate the area where the effect line crosses the abscissa (dose axis). This is considered the "no adverse effect level" (NOAEL). At this point, uncertainty factors are applied to determine a lower dose that is considered to be "safe." Crude guidelines exist for applying the uncertainty factors (and possibly a modifying factor to account for other concerns). In animal studies, these range from 3 to powers of 10. There is weak rationale for applying these factors when extrapolating from rodents to man. However, with other species, little background is available. The final dose obtained in this way becomes a reference dose (RfD) (for ingestion).

Sulfates as purported causes of diarrhea represent a special case. The human studies are complicated by the cation effect and with the exception of the Heizer study [Heizer 1994] uncontrolled exposures. Originally the EPA utilized a factor of 3 for their uncertainty factor, based on the Chien study [Chien 1968], to get to 500 mg/l. It was suggested in a letter by Dr. Loehr [Loehr 1989] that a factor of 1.5 was more appropriate. However, there is no rationale or explanation for either factor.

Regarding exposure, the US EPA's Final Drinking Water Criteria Document for Sulfate indicates that "...it must be recognized that individual exposures may vary widely according to many personal choices and factors over which there is little control. Daily exposures and intake are profoundly affected by where an individual lives, works, and travels; by diet; and by physiologic characteristics related to age, sex, and health status. Individuals living in the same neighborhood or even in the same household can experience vastly different exposure patterns." Our opinion is that it is virtually impossible to determine, with any accuracy, a correct exposure formula, which of course, is vital to a reasonable risk assessment. Within the Regulatory Impact Analysis, National Primary Drinking Water Regulations, Sulfate document [Reg. Impact Anal, 1994], an attempt at an exposure assessment was made (Appendix D, page D-2), and admittedly ignored in the risk assessment.

8. CRITICISM OF THE EPA ACTION

The EPA's proposed action with regard to sulfates has spawned considerable criticism.

a. Workshop on Sulfates (May 20, 1992) [Workshop 1992]

An EPA workshop on sulfates was convened on May 20, 1992. The panelists were Marie Cassidy, Marilyn Morris and David Cole; EPA representatives were Charles Abernathy, Rebecca Calderon, Greg Helms and Jennifer Zavaleta. This meeting occurred before the Heizer study [Heizer 1994] was performed. Their conclusions were:

1. Additional studies are desirable;

2. The Chien study is less reliable than was thought in the past due to questions on levels of exposure. (#4 follows for consistency)...the 3 cases of diarrhea in infants in the Chien et al. study may or may not be attributed to sulfates. New studies would be desirable not only for defining the upper limits, but also in exploring the possible beneficial effects of sulfates.

3. The 500 mg/l value for sulfates is conservative but justifiable for adults and geriatrics. There are no differences betweens 400 and 500 mg/l, but there are differences between 500 and 1,200 mg/l in terms of health effects.

5. Acute/short-term effects are the appropriate focus for risk assessment and further research.

Further, the committee recommended additional studies, viz., a human epidemiology study (survey, cross-sectional, and/or prospective) in infants from geographical areas (with high sulfate water); a piglet gut study (Dr. Morris was concerned about extrapolating the pig study to infants.) They recommended against a human infant study (mainly because of ethical considerations).

Our Comments:

On point 1, we feel that additional studies are necessary, in addition to the Heizer study [Heizer 1994] which was not available at the time of the above meeting.

On point 2 and 4, the EPA [FR Dec 20, 1994 p 65582] indicates that the Chien study should be considered as qualitative evidence only. No one in the panel observed that the infants in this study were all transients and could represent this class of receptors rather than "infants." We believe that, since this study has been shown not to be a properly controlled study, it should be ignored: It only confounds the issue.

On point 3, we disagree. The Heizer study showed that 1,200 mg/l sulfate did not have an effect on diarrhea on humans, albeit the small sample size. The Heizer study did not investigate the beneficial effects of sulfates.

On point 4, we agree.

Discussion points in the paper include:

The panelists point out that the MCLG is to be established at a level at which there is no known or anticipated effect in humans with an added adequate margin of safety. We point out that the philosophy for setting reference doses (which should be similar to MCLGs) uses less strong language and is as follows:

The reference dose is an estimate (with uncertainty spanning perhaps an order of magnitude) of daily exposure to the human population (including sensitive groups) that is likely to be without appreciable risk of deleterious effects during a lifetime.

We contrast this definition with the words "no known or anticipated effect with an added margin of safety" above.

They admit that the database dealing with acclimation is weak, and that the 10 day acclimation period is somewhat arbitrary. We feel that the database is nonexistent.

Dr. Abernathy is quoted with observing that magnesium causes secretion of cholecystokinin which stimulated fluid secretion and intestinal motility. We observe that magnesium is poorly absorbed (like sulfate) but the other effect on motility leads to a faster transit time and less likelihood of diarrhea. The issue is vague and needs to be addressed in scientifically designed and implemented studies. We feel that the role of magnesium in the context of diarrhea has been inadequately treated.

The report indicates that since Canada implemented the 500 mg/l standard no cases of diarrhea were reported. We wonder about the cases of diarrhea reported before that standard was implemented for which we could not find references.

The report acknowledges that gaps in the data include the no effect level in infants, time to tolerance, and appropriate animal models for studies. We agree with this declaration.

The report indicates that the acclimation period is about the same as two cycles of the gut mucosal replacement. Physiologically we have found no reason why acclimation would require new cells. Our consultant-gastroenterologists were not satisfied with this concept. We feel that this observation indicates nothing within the present state of the art. Further the report of the panelists notes that cell turnover in infants may be faster. Does this mean that infants can acclimate more quickly than adults? Since there is no background for either premise, we only comment that the whole area of acclimation is vague and should be carefully studied.

Dr. Cassidy is quoted as proposing an epidemiologic study on a South Dakota population. This indicates to us that he is not satisfied with the Peterson study; neither are we.

It was also mentioned in the report that "...if diarrhea was a major problem, then it would have been widely spread and reported to pediatricians." We did not find this to be the case. Admittedly, we only discussed this with one pediatric gastroenterologist in South Dakota (Dr. Neidich); he confirmed our suspicion that it is not considered a major problem.

It is reported that Dr. Abernathy commented that ca. 1,000 mg/l sulfate produces diarrhea and that this value can be considered as the cut off value. Of course the Heizer study was not yet conducted which showed that 1,200 mg/l sulfate did not cause diarrhea.

There was some discussion of the spas in Europe of which many contain high sulfate levels. Assuming that the spa water does have a cathartic effect it is interesting to wonder whether people would consider this as healthful.

It was mentioned that sulfate intake by way of food is higher in Europe, indicating that their diet contains more cabbage, spinach and root vegetables and dietary fiber. It is interesting to note that these fiber rich foods, high in sulfate, are known to produce a more acceptable stool.

It was noted that sulfate absorption is influenced by the presence or absence of food in the stomach. We believe that the whole issue of sulfate induced diarrhea is subject to these kind of influences and that no regulation based solely on sulfate level in the water is appropriate.

Although the possibility of the elderly was suggested as a sensitive population, no supporting evidence was provided. It was also suggested that older persons have a diminished ability to absorb magnesium and other metals. We wonder how one would take this into account when considering the elderly with regard to sulfate concentrations in the water. In our conversations with the gastroenterologist (Dr. Giannella) at University Hospital (Cincinnati) he indicated that the elderly generally suffer from the opposite problem. We feel that including the elderly as a sensitive population lacks credibility.

There was some discussion of the influence of other metals and organic compounds which influence the absorbability of sulfates. Again, we feel that the entire issue is clouded by these multiple influences and regulating sulfate in drinking water is totally inappropriate as a measure to protect from diarrhea.

b. Statement by Richard R. Monson, M.D., Sc.D., 17 Oct. 1994 [Monson 1994]

Dr. Monson is a physician and professor in the Department of Epidemiology, Harvard School of Public Health, Boston, Massachusetts. His letter was provided by the American Mining Congress. We are not aware of the circumstances requiring this letter.

Dr. Monson reviewed the government documents available at the time of preparation of the letter. (Note that neither the Heizer study nor the Dec. 20 Federal Register notification was available.) He also reviewed the scientific literature available including the Chien, Peterson, and Moore publications mentioned previously in this report.

Dr. Monson indicates his concern regarding control measures with regard to the Chien study, viz. the possibility of other factors causing the diarrhea in the three children. We concur with his opinion. He indicates that the problem here may be one not related to the sulfates in the water and that all the contents of the water should be considered, not just sulfates. We concur. Dr. Monson indicates that EPA's basis for proposing the MCL is based on the Chien paper and that this "...stretches the bounds of reality." We concur.

Dr. Monson addressed the Economic Impact Analysis provided by the EPA (page 4-Summary of Findings). In our report (this document-Part B), Dr. Farrow discusses the points he addresses. Dr. Farrow's report agrees with Dr. Monson's statement that "...the economic impact analysis is insufficient in that it fails to provide sufficient documentation and scientific justification for the assumptions upon which its conclusions are based.

Letter from Max H. Dodson, Director of Water Management Division, Region VIII, US EPA to James R. Elder, Director of the Office of Ground Water and Drinking Water, US EPA (April 1, 1994), and the response [Dodson 1994]

Mr. Dodson begins with expressing his concern regarding the lack of sufficient acknowledgement in the draft proposed rule of the weakness of the data supporting the sulfate regulation and that the result of such legislation is likely to cause a large economic burden on the public water supplies without commensurate public health protection. We concur. He references the Chien and Peterson studies as the only data available. (Apparently, the Heizer study or part of it was available to him but was not discussed in the current EPA analysis.) He indicates that Region VIII supported the 500 mg/l standard but now feels the situation has changed. He quotes the expert panel review as diminishing his view of the Chien study.

He suggests that it is inappropriate to consider cathartic agents as background for the regulation, essentially, because they are given as a bolus in very high concentration. We concur.

He considers, as we do also, that the Peterson study is anecdotal and provides a non-comparable dosing situation.

Mr. Dodson discusses the Veenhuizen study with piglets and observes that the increase in diarrhea occurred at the 1,800 mg/l dose. Our discussion of this paper in our report is in accord with his observation.

Mr. Dodson indicates that the Heizer study with humans and piglets, currently undergoing peer review, indicates no significant laxative effect and that in the piglet study, there was no clinically significant diarrhea until a concentration of 1,800 mg/l was given. He urges that these studies be taken into account, as we do.

On the issue of dehydration, Mr. Dodson points out that the mechanism of action of osmotic cathartics (sulfates) is different than that of infectious etiologies. He points out that the calculation of the amount of water that is retained by sulfates at 1,000 mg/l cannot account for a significant loss of water either in adults or children, and results in a situation that is "...NOT A PATHOLOGIC CONDITION" (his emphasis). We concur and believe that dehydration is a result of a number of factors, including socioeconomic, that can occur after any number of initiating events.

On April 21, 1994, Mr. Elder replied. He admitted that there is not a single study of excellent quality which can be used to quantify the toxicological effects of sulfate in drinking water, but that the available data support an MCLG of 500 mg/l. He pointed out the statutory requirements for reproposing the sulfate rule. He acknowledged the Heizer study and indicated that the studies will be referenced in the preamble of the proposed rule and incorporated in the health effects criteria document and decision for the final rule in May 1996. He further indicated that the EPA expects to publish a Notice of Availability if the new studies provide data that appears to significantly affect EPA's decision in the final rule making. We believe that while the new information (the Heizer study) is not adequate for defining the regulatory level, it clearly shows that the 500 mg/l value is grossly over conservative.

9. POSITIVE ION EFFECTS

As mentioned earlier, sodium sulfate (Na_2SO_4) holds three ions in solution while magnesium sulfate ($MgSO_4$) holds only two. The magnesium ion, like sulfate, has a low absorbability in the GI

tract. Sodium, on the other hand is highly absorbable. Since electrical neutrality must be observed, the sodium ions cannot be absorbed without a concomitant secretion of other positive ions, or an absorption of some negative species. The complete explanation of this problem is not apparent.

It is known that magnesium has other properties which alter absorption from the gut. As mentioned earlier, it is inappropriate to consider sulfate ions alone in the overall picture of diarrhea and drinking water.

10. SULFATES AS MEDICATION

Magnesium sulfate and other sulfate compounds have long had therapeutic use as cathartics. They are given as a bolus, a high concentration in a small amount of water, one time. Toxicologists and others have known for a long time that the effects of a large dose of a compound given in this way cannot be extrapolated to the effects of a small dose given incrementally over time. This is especially true with regard to sulfates where the mechanism of action is dependent on the increments of dose. It is also known that sulfates in low concentration are readily absorbed while large doses are not [Drinking Water Criteria Document]. Therefore, it is inappropriate to suggest that because therapeutic use causes diarrhea, that incremental doses in water will do the same.

11. THE GASTROENTEROLOGY OF A NATION:

Generally speaking, in the United States, diarrhea as a problem is of lesser concern than the opposite, viz., constipation. One might view the gastroenterology of a nation as the balance of forces causing these two conditions. The etiology of these conditions are numerous and varied. This balance seems to be acceptable within our nation, i.e. we do not seem to have areas endemic to either condition. Perhaps it would be best to let this natural process proceed without intervention.

12. INTERFACE TO ECONOMIC EVALUATION

Natural science information is the foundation for an economic analysis of the benefits from a health based regulation. Where the natural science is weak, the benefit analysis will also be weak. In addition, the benefit analysis brings in new material that may be weak or strong on its own merits. Several key pieces of natural science information form the interface with an economic analysis of benefits. Several issues are identified below:

- The existence of a dose-response type of relation: If such a link is not established in the natural science literature then there can be no expected economic benefits from a regulation that changes the dose of an exposed population. In part B, the economic analysis uses the material EPA has identified as the product of t heir search for a dose-response relation as preferable to assuming that all exposed individuals become ill. However, the economic results regarding benefits should be viewed as preliminary pending a dose-response relation that is accepted in the scientific community.

- The personal health behavior of individuals in high sulfate areas prior to any illness: Individuals may naturally take some avoidance behavior, such as buying bottled water, if water is objectionable on an aesthetic basis such as smell, taste, or sight. The economic results in Part B regarding benefits should be regarded as preliminary until the avoidance behavior of individuals in high sulfate areas is understood as this affects what is measured as the exposed population.

- If a dose-response type of relation is established, the specific physical impacts and the behavioral choices of individuals must be understood for a credible economic analysis. For instance, the specifics of a disease affects whether an individual seeks medical advice and the type of treatment received. The absence of such specific information for sulfate induced diarrhea requires than an economic analysis make numerous assumptions. If medical information changes on these topics, then the economic analysis must also change.

These links between natural science apply to the economic analysis of benefits discussed in Part B. They do not apply to the economic analysis of omitted costs discussed in the first section of Part B for which the interface with other regulations is the key issue.

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Part B: ECONOMIC EVALUATION

An Economic Review of the Omitted Cost Elements and the Benefits of the EPA Proposed Sulfate Maximum Contaminant Level

Scott Farrow, Ph.D., Randy Fischer, E.I.T.,
David Jackson, P.E. and Susan Menkhaus, M.E.M.
Dames & Moore[1]

1.0 Introduction

The EPA proposed a National Primary Drinking Water Regulation including a Maximum Contaminant Level (MCL) for sulfate[2]. Among other questions, they asked for public comment regarding, "Are the assumptions used in the analysis of the costs and benefits of the proposed rule reasonable?" This report addresses that question.

The lead author of this report has over a dozen years professional economics experience at the Ph.D. level including: teaching benefit-cost analysis at the graduate level; the preparation of benefit-cost analyses for the development of governmental policy; responsibility for the senior staff review of all economic and most EPA and Department of Energy issues for the White House Council on Environmental Quality in the Bush Administration and an economist's role in Policy, Planning and Evaluation for the White House Council on Wage and Price Stability in the Carter Administration. Important contributions have been made by other authors with over 17 years experience in remediating polluted sites, engineering cost and regulatory analysis.

Are the assumptions used in the EPA analysis of the costs and benefits of the proposed rule reasonable? No. Several key assumptions of the analysis are contrary to the direction of Executive Order 12866[3] and standard professional practice. These unreasonable assumptions lead to fundamental flaws in the analysis

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[1]This report was prepared under contract to the University of Cincinnati as part of a project funded by the American Mining Congress. The funding organization was given the right to identify factual or conceptual errors but not to modify the editorial content of this report.

[2]Federal Register, vol. 59, No. 243, Tuesday, December 20, 1994, p. 65578-65684. Specific questions for comment are listed on page 65599.

[3]Executive Order 12866 of September 30, 1993, "Regulatory Planning and Review," Federal Register, Vol. 58, No. 190, Monday, October 4, 1993 p. 51735-51744.

such that neither a decision maker nor the public can make an informed judgment on the rule. One fundamental flaw is the omission of a category of remediation cost elements directly linked by law to MCLs; these costs may be several billion dollars annually. Such costs are many times larger than the costs reported in the proposed rule. A second fundamental flaw is the failure to develop a measure of the benefits of the rule based on standard professional practice. This is clearest in EPA's regulatory impact analysis[4] when a single table brings EPA's information on total cost and "typical" benefits together. The benefits are for an individual and in dollars, the costs are aggregated across all sites and reported in millions of dollars. In short, the EPA has reported costs and benefits in incomparable terms that inhibit informed judgment. When EPA's data on the exposed population and "typical" benefits are adapted to a standard measure, the potential benefits of the rule decline dramatically. More importantly, the costs can be compared to the benefits.

This report first reviews the evidence for omitted cost elements and then reviews the evidence of over-stated benefits. Detailed quantitative material in support of these reviews is provided in the Appendix.

2.0 Omitted Cost Elements

The EPA analysis of the cost of the rule is fundamentally flawed because agencies are directed to "assess *all* costs and benefits of available regulatory alternatives[5]." This direction merely reinforces the standard professional practice of evaluating costs and benefits to whomsoever they accrue. In addition, existing guidance by the Office of Management and Budget[6] states that, "The fundamental test of a satisfactory RIA [Regulatory Impact Analysis] is whether it enables independent reviewers to make an informed judgment that the objectives (of the Executive Order) are satisfied." The guidance states that an RIA should show that, "There is adequate information concerning the need for and the consequences of the proposed action; (and that) the potential benefits to society outweigh the potential costs."

In direct response to EPA's request for comment on their assumptions, the Agency assumes that there is zero additional cost to any parties except drinking water providers as a result of

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[4]Exhibit 6-1, U.S. EPA Regulatory Impact Analysis: National Primary Drinking Water Regulations, Sulfate, August 31, 1994.

[5]Executive Order, 12866, op. cit.,

[6]Regulatory Impact Analysis Guidance, Appendix V, Regulatory Program of the United States Government, and as amended by Executive Order 12866.

establishing a primary drinking water standard with an MCL for sulfate. This assumption is incorrect because MCL's have been identified as applicable or relevant and appropriate criteria (ARAR) for CERCLA (Comprehensive Environmental Response, Compensation and Liability Act) remediation by statute and by EPA identification[7]. For instance, EPA states "MCL's are potentially relevant and appropriate during a CERCLA cleanup for ground or surface waters that are current or potential sources of drinking water[8]." Surface and groundwater damage has also been a significant part of natural resource damage cases under CERCLA and the Clean Water Act, and The Oil Pollution Act of 1990. For instance, the Eagle Mine in Colorado was part of a natural resource damages case involving damage to surface and to groundwater[9]. Some types of mining properties are a significant source of sulfate in ground water.

State programs such as identified by EPA, in National Water Quality Inventory, 1992 Report to Congress,[10] also utilize MCL's for a variety of programs including State groundwater protection programs and State CERCLA regulations. Over 40 states use MCL's as a standard for state CERCLA remediation as identified in Appendix Table I. At least some state programs identify the regulations as applying to the entire state, not just to specific aquifers or groundwater types. The direct links identified in EPA publications between an MCL and at least these other major programs require that the additional costs of these programs be considered.

It is well understood that in practice there is some threshold where specific costs and benefits become so small that they can be ignored. The omission of costs caused by a new MCL could have been justified by EPA if they investigated the costs and found such costs to be de minimis. However, a screening analysis summarized below and explained in more detail in the Appendix reveals that at the proposed level of 500 mg/l of sulfate there could be omitted costs ranging from 600 million dollars to several billion dollars

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[7]CERCLA section 121(d)(2)(A)(i), the National Contingency Plan (40 CFR Part 300.430(e)(2)(i)(B)and agency public releases such as: "CERCLA Compliance with the Clean Water Act and the Safe Drinking Water Act," Publication 9234.1-06/FS, February, 1990 and "ARAR's Q's and A's: Compliance with the New SDWA National Primary Drinking Water Regulations for Organic and Inorganic Chemicals," Publication 9234.2-15/FS, August, 1991.

[8]ARAR's Q's and A's, op. cit.

[9]Kopp, R. and K. Smith, "Implementing Natural Resource Damage Assessments," in Valuing Natural Assets, ed. R. Kopp and K. Smith, Resources for the Future, Washington, D.C. 1993.

[10]U.S. EPA, National Water Quality Report to Congress, 1992.

per year. These omitted costs appear to be hundreds of times larger than the direct water system compliance costs estimated by EPA in the proposal.

Because of the direct links identified by Federal and State statutes, by EPA's published regulatory advice and because of the possibility of large costs, EPA's assumption of zero cost for these directly related programs is not reasonable. Neither a decision maker nor the public can make an informed decision on the basis of the Agency's cost analysis that omits such large cost considerations.

2.1 Summary of Screening Analysis for the Size of Omitted Costs

Despite the short time for comment and believing that it is EPA's responsibility to fully develop an analysis, several approaches were taken to estimate the order of magnitude of the omitted costs. Several different approaches, each explained below, generated estimates of increased remediation costs of several billion dollars if a sulfate MCL at 500 mg/l becomes final. A more conceptual approach is taken to the increase in natural resource damage claims which indicates that such increases might be large without attaching any dollar amount to them.

2.1.1 Estimated increases in remediation cost

A top-down aggregated approach is first used to generate an estimate followed by building up an estimate based on remediation costs at individual sites.

Aggregate Method

The crudest approach is to estimate a percentage increase to existing cost estimates for remediating waste sites. This top-down or aggregate approach uses a frequently cited Department of Energy funded study[11] from the University of Tennessee in 1991. That study investigated the total cost of remediating sites included under CERCLA, RCRA, Federal facilities, Underground Storage Tanks and state/private programs. Virtually all of these programs have the potential for sulfate contamination. The University of Tennessee study generated a range of costs, based on current implementation policies, from $475 billion to 1 trillion dollars in present value. The best guess was $750 billion dollars.

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[11]Russell, M., W. Colglazier and M. English, Hazardous Waste Remediation: The Task Ahead, Waste Management Research and Education Institute, The University of Tennessee, Knoxville, December, 1991.

As discussed above, MCL's are one of the most frequent criteria used for clean-ups. There are currently 84 primary[12] MCL's. Adding one more MCL, represents slightly more than a 1 percent increase in MCL's. This is, of course, a large assumption about the uniform impact of MCL's and omitting other ARAR's. For screening purposes however, suppose that the present value cost of clean-up increases by 1 percent, a total of 7.5 billion dollars. On an annualized basis, at the Office of Management and Budget's suggested rate of 7 percent and over the 30 year time horizon of the study, this first cut estimate of cost increase due to a sulfate MCL may be about $600 million per year. Such an aggregate approach ignores a variety of other evidence. Consequently, a somewhat more detailed estimate is developed by applying an estimate of increased costs to categories of sites.

Disaggregated Approach

The disaggregated approach identifies the total number of sites in some major remediation programs (N), the probability that such sites might have sulfate contamination, (P), and the resulting cost if a site has sulfate contamination (C).

Expected cost = N*P*C

Detailed information on the calculation of these terms is provided in the Appendix. A short summary follows.

The number of sites, N, can come from Federal or State CERCLA programs, RCRA programs, and sites outside of such reports such as abandoned mine sites and electric power utilities. Some double counting may occur across these programs but for this type of screening analysis, the possible extent does not seem too large. Data sources are summarized in Appendix Table 2.

Estimating the probability, P, that a site may be affected by the sulfate rule is more difficult. By reviewing professional papers and data bases and based on experience, proportions of sites needing sulfate remediation is assumed to be between 1 and 10 percent, depending on the program as identified in the Appendix.

Several scenarios are used to estimate the additional cost, C, for each site affected. In general, the sites potentially needing sulfate remediation are assumed to have the same size and cost distribution of the water systems estimated by EPA. Some supplemental information is available to indicate the suitability of this assumption for a screening analysis[13]. The use of EPA's

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[12]U.S. EPA Safe Drinking Water Hotline (800-426-7751).

[13]A large site reported in "Focused Feasibility Study for Sulfates in Ground Water Southwest Salt Lake Country, Utah", Prepared for

data does not indicate that there is full agreement with EPA's cost data; it merely provides a common starting point.

A second cost scenario is based on an extensive field investigation of the cost to remediate sulfates at a large site[14]. Data from this case study are used to expand the first scenario's costs, thereby reflecting a more aggressive remediation policy than has been considered by the EPA.

The result of this disaggregated approach is summarized in Table 1. For the 500 mg/l MCL level identified by the EPA, screening estimates for annual remediation costs ranged between 3.0 billion and 12.4 billion dollars based on approximately 22,000 sites needing remediation. Although these are annual costs, it is assumed that all of the sites requiring sulfate remediation are operating at one time. A significant ramp-up in cost to these estimates could be expected followed by a gradual decline after an extended treatment period.

TABLE 1: REMEDIATION COSTS DUE TO SULFATE MCL*

	EPA Estimate		Screening Estimates		
MCL Level	Sites	Cost	Sites	Annual Cost 1 (millions)	Annual Cost 2 (millions)
500 mg/l	0	0	22,100	$ 3,016	$ 12,426
800 mg/l	0	0	8,400	1,038	6,205
1000 mg/l	0	0	5,300	590	2,085
2000 mg/l	0	0	1,300	137	343

* For details: See the Appendix Text and Tables 4 and 5.

Kennecott Corporation, Salt Lake City, Utah, May, 1993, Project No. 23080. would place the site in the upper tail or beyond the upper end of the EPA distribution depending on the remediation strategy chosen.

[14]Ibid.

Estimated costs decline substantially as the MCL level is changed. If the MCL level for clean-up purposes were set at 2,000 mg/l then estimated sites decline to about 1,300 and estimated costs decline to a range of $137 million to $343 million dollars per year. These results are larger than but consistent with the top-down approach: the costs omitted by EPA are likely to be significantly larger than those included. Consequently, the cost assumption made by EPA, that such costs are zero, is unreasonable.

2.2 Natural Resource Damages

In addition to remediation costs, some parties to groundwater and surface water pollution may be liable for natural resource damages under CERCLA, the Clean Water Act, or the Oil Pollution Act of 1990. The process for determining such damages is still in a state of evolution as regulations are under development at the National Oceanic and Atmospheric Administration[15] (NOAA) and others have been remanded to the Department of the Interior[16]. However, groundwater and surface water pollution have figured prominently in some natural resource damage cases to date such as the Eagle Mine in Colorado. EPA does not appear to have coordinated with these other agencies on the potential for a sulfate standard to affect the natural resource damage claim. However, it is shown below that the environmental model used by NOAA in support of their natural resource damage claims, the Habitat Equivalency Model, has a possible link to sulfate contamination[17].

The Habitat Equivalency Model based on a concept by Unsworth and Bishop,[18] is used by NOAA to define the natural resource that is to be replaced under the replacement cost provisions of natural resource damages. In brief, the model attempts to establish a relation between the years of natural resource services lost, a

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[15]National Oceanic and Atmospheric Administration, "Natural Resource Damage Assessments; Proposed Rules," Federal Register, January 7, 1994, p. 1063 - 1191.

[16]43 Code of Federal Regulations, part 11, as changed by *Ohio v. U.S. Department of the Interior,* 880 F.2d 432 (D.C. Cir. 1989) and *Colorado v. U.S. Department of the Interior,* 880 F.2d 481 (D.C. Cir. *1989.)*

[17]This does not imply agreement by the authors with the Habitat Equivalency Model. The demonstration is that current federal agency practice establishes a plausible link between the proposed sulfate regulation and costs.

[18]Unsworth, R. and R. Bishop, "Assessing Natural Resource Damages Using Environmental Annuities," Ecological Economics, 11(1994) 35-41.

comparable area to be restored and the cost to be paid in compensation. Groundwater is a natural resource that may be considered damaged under these provisions. Application of the habitat equivalency model would identify some units, such as gallons or cubic yards that might have been damaged over some period of time. Based on field experience, it is possible that defining sulfate as an MCL will extend both the area and the time of alleged damage relative to other chemical markers potentially used under CERCLA or the other relevant statutes. If so, the definition of the MCL will result in higher costs.

Consequently, natural resource damage claims represent a potentially large cost that EPA has assumed to be zero. Such a cost may in fact be zero but EPA should document this result after consultation with other affected state and federal agencies.

3.0 Estimated Benefits of the Proposed Sulfate MCL

Several key assumptions used in the benefits analysis of the proposed rule are also not reasonable. EPA's assumptions do not allow the calculation of benefits in a manner that is consistent with standard professional practice. In part, this is because EPA has not provided sufficient information as directed by guidance for regulatory impacts provided by the Office of Management and Budget[19]. Standard professional practice would estimate the expected benefits by first calculating the cost of doing nothing, and then computing the cost savings that result from the regulation. The cost savings are identified as the benefits of the proposed rule. EPA should, but did not, first calculate the baseline expected cost to society if no action is taken. For instance, defining the exposed population (X), the probability that the exposed population gets ill (P_i), probability that the person seeks medical attention of a particular type (P_m) (e.g. over-the-counter medication, out-patient care, etc.), and the valuation if the person becomes ill (V), then the expected cost (and the maximum potential benefit from medical attention of a particular type) is:

$$\text{Maximum Potential benefit} = X * P_i * P_m * V$$

The residual cost after implementation of the proposed rule results from changing any of X, P_i, P_m, or V. The actual benefit should then be calculated as the maximum potential benefit less the residual cost when the program is implemented. EPA makes the unreasonable assumption that there is no residual cost after the program is implemented by assuming the exposed population is zero.

Each of the specific elements in the above relation will be discussed in turn. The critique provided about each of the

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[19]Regulatory Impact Analysis Guidance, op. cit.

specific elements are quantified by modifying EPA's Exhibit 5-2 in the RIA, a substantial part of which EPA reproduced as Table 10 in the Federal Register notice of proposed rule making. However it is critical to note that the following economic discussion assumes there is medical evidence of sulfate related health problems which is highly debateable as discussed in Part A. For instance, the economic analysis is built on a variety of data related to types of diarrhea cases that may or may not be similar to the effects of sulfates. If findings related to the medical science change, then the economic analysis necessarily changes.

3.1 Exposed population, X

EPA estimates the exposed population based upon a ratio established between individuals serviced by a given water treatment system, and the total population of the United States. They assume that travelers visit areas in proportion to the population of the resident population. No documentation is provided for this assumption that travelers are as likely to visit small water systems such as those identified in North Dakota, South Dakota, Texas and Utah in the same proportion as other areas. A reasonable assumption is that a smaller proportion of travelers would visit these sites.

EPA's analysis of the exposed population also makes an assumption about the number of infants (under 1 year old) who are traveling through areas with high sulfate contents. EPA's estimate of traveling infants are based upon a percentage of the population under 1 year old, as well as the percentage of population traveling that is not related to business. EPA assumes without documentation that the frequency of travel is the same for people with one year old children as with any other member of the adult population and that the infant accompanies the adult on all non-business travel. This undocumented assumption seems unreasonably high. Finally, EPA assumes that all infants in the identified areas are exposed to high sulfate water. However, breast feeding, pre-mixed formula, and formula mixed with bottled water are all ways that exposure by infants is avoided. EPA assumes that no infants fall into these alternative categories.

3.2 Probability of illness, P_i

EPA made a fundamental error by omitting estimation of the probability of illness (P_i), either in the baseline case or after the regulation is implemented. EPA states that this is due to their inability to identify a satisfactory dose-response function. This is de-facto evidence of insufficient information to make an informed judgment about the rule. Implicitly, EPA conveys the impression that in the absence of regulation all members of the exposed population become ill and with the regulation they do not become ill, i.e. P equals 1 prior to regulation and 0 after regulation. These are unrealistic assumptions as indicated by the

probability of illness equation identified in the Regulatory Impact Analysis[20] based on data in Peterson, by visual observation of the Peterson[21] data, and on Heizer[22]. With respect to infants, the EPA assumes that approximately 2,700 infants per year are hospitalized due to sulfates for 4 days each, a total of 10,800 hospital days per year. However, the data set for infants on which EPA bases its analysis consists of only 3 infants and is of poor quality[23]. In the context of a benefit-cost analysis, the value of information is large for field data that can document some, or a few, of the 10,800 excess hospital days per year in a limited geographic area predicted by the EPA. Recent testimony presented by the Dakota Department of Environment and Natural Resources[24] reviews evidence from that state indicating the absence of a health problem due to sulfates. The quantitative analysis to be presented in Section 3.5 uses EPA provided information on the probability of illness. The results are conservative if no dose-response type of relationship is credible.

3.3 Probability of Seeking Medical Attention, P_a

A third area of concern in the evaluation of the EPA estimates for benefits is the relationship between the effect of the sulfates (illness) and the choice of behavior following the illness. The EPA assumes that individuals have three options: 1) do nothing, 2) obtain outpatient services, and 3) become hospitalized. Over-the-counter medication or other actions for self treatment offer a fourth option not explored by the EPA. The EPA makes assumptions regarding the percentages of response for the three listed options which are explored below.

Limited information is available regarding the probable action taken by individuals in the event of sulfate related illness[25]. The EPA indicates that the majority of adults (80 percent) do not seek

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[20]Appendix D, Regulatory Impact Analysis, op. cit.

[21]Peterson, N.L. "Sulfates in Drinking Water," Official Bulletin North Dakota Water Sewage Works 18 (10/11), 1951.

[22]Heizer, W. , et. al., "The Effect of Sulfate in Drinking Water on Intestinal Function," Department of Medicine, University of North Carolina, (undated), prepared for the U.S. EPA.

[23] Part A, this report

[24] South Dakota Department of Environment and Natural Resources, Testimony presented on February 2, 1995

[25] Part A of this report

medical care for any type of diarrhea[26]. EPA then assumes that 100% of the traveling adults (who are all evidently assumed to have diarrhea) receive outpatient care, yet only 20% of the new-resident adult population obtains outpatient care. This assumption is not reasonable, since the local population is more likely to know nearby medical facilities, and have a regular doctor.

On a national basis, only about 10 percent of diarrhea cases in children less than 5 years old lead to doctor visits and 1 percent to hospitalizations[27]. EPA has assumed for sulfate diarrhea that 90 percent of infants will receive outpatient care and ten percent of infants will receive hospital care medical visits (both outpatient services and hospitalization). It may actually be reasonable to assume that sulfate induced diarrhea would result in even a lower proportion of medical care, due to the lack of any accompanying fever or other serious symptoms. However, the EPA assumption is modified in the integrated analysis in Section 3.5 to be consistent with the nationwide proportions reported for all cases of diarrhea.

It is also noted, without modifying EPA's assumptions, that it is reasonable to assume for both infants and adult populations that a common response for illnesses such as diarrhea is to wait several days to be sure that the illness is not the result of mild food poisoning or simple discomfort. The U.S. Travel Center reports that 59% of the travel over 100 miles taken in 1991 was weekend travel. It is therefore reasonable to assume that this proportion of the traveling adult and infant population will likely not seek medical attention until returning home after travel. If the EPA assumption about the link between sulfates and illness is correct, the diarrhea will not persist and no medical attention will be needed.

3.4 Valuation of Baseline Cost, V

The EPA estimates the valuation of the baseline cost, or per unit benefits, based upon a number of factors as outlined in the calculation of the Exhibit 5-2 of the Regulatory Impact Analysis. This valuation includes assumptions about the number of days an infant would be hospitalized for diarrhea, the value of an hour lost based upon wage rates, and other assumptions regarding the medical expenses incurred.

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[26]EPA cites Brownlee, H.J. "Family Practitioner's Guide to Patient Self-Treatment of Acute Diarrhea," The American Journal of Medicine, Vol. 88, Suppl 6A, June 1990, pp 6A (27S-29S.)

[27]Avendano, P., et. al., "Costs Associated with Office Visits for Diarrhea in Infants and Toddlers," Pediatric Infectious Diseases Journal, Vol. 12, No. 11, 1993.

Given that an individual infant does have to be hospitalized with diarrhea, it is unlikely that the children would be hospitalized for four days. According to professional medical judgment[28] a better estimate for current hospital practice is two days.

The EPA makes an assumption about the value of an hour lost, both in terms of the hour lost for adults who have diarrhea, as well as the adults who must take time to be with sick infants. The average hourly wage provided by the EPA study ranged between $14 and $23 per hour, with $19 as the best estimate. The Economic Report of the President[29] reported that the average hourly earnings for Private non-agricultural industries in 1991 is $10.33. It is likely that in rural agricultural areas, the hourly earnings are even lower. For instance, average hourly earnings in the entire State of South Dakota are reported to be 75 percent of the national average[30].

These modifications that reduce the cost per case are likely consistent with the broader literature on the cost per case of infant diarrhea. It is not established how treatment and response to sulfate diarrhea is similar to or different from other types of diarrhea. EPA assumes that sulfate induced diarrhea treatment is treated like microbacterial diarrhea (for instance they assume that antibiotics are administered which has no relation to the assumed cause of the illness.) In general, EPA's estimate of a case of infant diarrhea uses average out-patient care costs that range from $218 to $273. This is at the upper end of medical estimates. Avendano[31], et. al. cite earlier studies of out-patient costs of $69, $90 and $78. Avendano, et. al. then study the per case cost, possibly including some hospitalization time, that when adjusted for the median family income results in a value of $200 per case.

Recent interest in health policy has led several economists to survey the literature on the economic value of different types of ill health[32]. In the chapter expressly dedicated to providing

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[28] Part A, Interview with Medical Specialists

[29] Council of Economic Advisors, Economic Report of the President, 1993, Table B-42, p. 396.

[30] Statistical Abstract of the United States, 1994.

[31] Avendano, op. cit.

[32] Tolley, G., D. Kenkel and R. Fabian, Valuing Health for Policy: An Economic Approach, The University of Chicago Press, Chicago, 1994.

state-of-the-art values for health policy,[33] daily costs are provided for mild and severe food poisoning. Since it is not clear what model, if any, is appropriate for sulfate induced illness, the response may be more like that of mild or severe food poisoning. Consequently, one estimate of benefits is to use the medium willingness to pay for mild food poisoning of $80 per day, and for severe food poisoning of $130 per day. These values can be substituted for the medical cost based estimates calculated by the EPA. and are cited as the "Tolley, et al." estimates in the material that follows.

3.5 Conclusions Regarding the Benefits Estimates

EPA's assumptions about the exposed population, the probability of illness, the probability of medical attention and the valuation of the cost of illness are integrated in this section. Table 2 identifies the different values determined by the EPA and the alternative benefits analysis provided here. Table 3 provides both the marginal (additional) and the total benefits for several possible levels of the MCL. The aggregate benefits can be calculated by a variety of iterations of the analysis, depending upon the nature of the assumptions made. Several of the expanded tables are reproduced in the Appendix to show the exact process of calculation. The following are the changes to the EPA "typical" benefits analysis in order to compute the maximum expected potential benefits:

- The probability of becoming ill at different exposure levels is computed from Appendix D of the EPA model.
- The probability of traveling adults who will obtain outpatient medical care is reduced from 100% to 20% to become the same percentage as the new-resident adult population.
- The rate of infants taken to out-patient care and to hospitals is changed from .9 and .1 to correspond to the national average of .1 and .01, respectively.
- The number of lost days for hospitalization was reduced from four to two.
- The hourly wage rate was reduced from $19.00 to $10.33.

[33] "State-of-the-Art Health Values," Chapter 15 in Tolley, et. al., op. cit.

As indicated in Table 3, the maximum potential benefits based on assuming that sulfate diarrhea is like other diarrhea, and the other assumptions discussed above, range from $7.3 million to $18 million for the 500 mg/l MCL level and decline rapidly, reaching zero at 1,000 mg/l. The decline in benefits results from two factors, the decrease in the exposed population at higher levels of the MCL and the increasing probability of illness at higher levels. The analysis is however, necessarily built on a medical science link between sulfate ingestion, the potential for the diarrhea, and the patient's behavioral choices. If these links are not established, then the benefits may be substantially smaller and may also be zero.

4.0 Summary

EPA's assumptions about costs and benefits contain unreasonable elements. An analysis that allows the comparison of costs and benefits indicates that the actual costs may exceed benefits by billions of dollars per year at the sulfate MCL level recommended by EPA. Until EPA can substantiate its assumptions on the existence and magnitude of both the benefits and the costs as called into question in this report, the sulfate rule as currently proposed is likely to make the country substantially worse off instead of better off.

Tables 2 & 3 Follow

Table 2. COMPARISON OF EPA AND REVISED ASSUMPTIONS

Issue	EPA value	EPA Source	Report value	Report Source
Probability of illness	1	Unknown	<<1	Appendix D of EPA report
Probability Travelling Adults Will Obtain Outpatient Services	100%	Unknown	20%	Same value as EPA value for new resident adults
Probability Infants (Travelling and Resident) will receive outpatient care	90%	Unkown	10%	Avendano et. al. (1993)
Probability Infants (Travelling and Resident) will receive hospital care	10%	Unkown	1%	Avendano et. al. (1993)
Number of hospitalization days for infants	4	Unknown	2	Professional medical opinion
Wage rate for value per hour lost	$19.00	EPA citation to "Economic Report of the President" (1990)	$10.33	Economic Report of the President (1993)

Table 3. SUMMARY OF BENEFITS FROM SULFATE RULE*

MCL level	Marginal Benefit		Total Benefit	
	Modified Medical Calculations	Tolley et.al. Calculations	Modified Medical Calculations	Tolley et.al. Calculations
	(US$ millions)	(US$ millions)	(US$ millions)	(US$ millions)
500 mg/l	6.8	2.8	18.0	7.3
600 mg/l	3.2	1.3	11.2	4.5
700 mg/l	1.5	0.6	8.0	3.2
800 mg/l	3.2	1.3	6.5	2.6
900 mg/l	3.3	1.3	3.3	1.3
1000 mg/l	0.0	0.0	0.0	0.0
2000 mg/l	0.0	0.0	0.0	0.0

* These are "medium" or best guess estimates. The marginal and total benefit could be zero if no dose response relation is accepted as credible.

Economics Appendix

Detail on calculation of omitted remediation cost elements

The following text describes data and results in Appendix Tables 2-5.

Appendix Tables 4 and 5:

Columns 2-6: These list the potential sites, N. Sources are given in Appendix Table 2. An important addition is the category of "other." The "other" category addresses information from the electric power industry and the mining industry that was likely not to have been included in earlier columns. EPA has documented that there are approximately 88,000 abandoned mine sites in the country that are candidate sources for sulfate pollution while Department of Energy and Bureau of Mines sources indicate over 8,000 operating mines. Finally, electric power utilities who burn coal may have sulfate pollution from the disposal of various types of ash and scrubber sludge. There are approximately 2,000 coal burning power plants in the country. In addition, federal facilities and other historically coal burning facilities may have sulfate pollution from ash disposal.

Column 7-11: The number of sites that could be affected by sulfates. This is of course very poorly known because sulfates have not been the subject of as much focus as they will receive if a primary drinking water standard is defined. It is likely that a new regulation will lead to increased reporting of sulfate contamination. Importantly, for the actual choice of remediation each site is evaluated for a number of factors including the risk to actual and potential drinking water sources. The decision maker has a substantial degree of authority to include or exclude elements of the clean-up plan. Promulgating a primary drinking water standard for sulfates is likely to increase the importance of this criteria to decision-makers. The actual impact is difficult to gauge. For the purposes of this screening study, a crude approach is used, while identifying data that may help EPA implement a more detailed process. It is possible that the initial estimates of sites affected by the proposed regulation is either over or under-stated. One element of conservatism is included by adjusting the final cost estimate obtained downward by the proportion of states that already identify 250 mg/l of sulfate as a standard for some remediation activities.

In order to estimate the set of sites potentially affected by sulfate, several database searches were conducted. In general, the MCL of 500 mg/l is considered as the base case. A crude estimate of the proportion of sulfate problem sites for the National

of the proportion of sulfate problem sites for the National Priorities list was informed by a search of records of decision (ROD's). The ROD's indicated that 8 out of 1300 (or less than 1 percent of current decisions) have referred to sulfates as a primary contaminant. However, almost 15 percent of the ROD's refer to sulfates in some form. An approximate mid point of 7 percent was chosen as the proportion of sites that may have a sulfate problem at the proposed level (the most restrictive considered) of 500 mg/l.

As a check, knowledge of manufacturing processes suggest that the following kinds of sites may be vulnerable to past or present sulfate pollution: metal mining, metal processing, coal mining and coal preparation, phosphate fertilizer plants, oil refineries, natural gas processing and distribution systems, paper manufacturing facilities, coal-fired power plants, dry wall (gypsum) facilities, inorganic chemical plants, herbicide plants, landfills, and likely others.

With respect to the state CERCLA programs, the same proportion, 7 percent, was used for sites identified by EPA[34] as being in state CERCLA programs. Although it is expected that in the future some of the state sites will become Federal CERCLA sites, use of the same proportion for each group made such intergroup transfers not relevant.

For RCRA, a search of the RCRIS data base for sulfate compounds yielded 588 hits. Because the RCRIS data base includes generators, transporters and disposal sites with a focus on hazardous waste, it is likely that sulfates are under reported. One study of RCRA landfills[35] indicated that of 40 landfills in the eastern U.S. (not a primary area of concern for sulfates according to the EPA), over 35 percent of the landfills had some measurable level of sulfates while over 2 percent of those with sulfates had levels exceeding 1,000 mg/l. For instance, two of the top four chemicals listed in the Toxic Release Inventory (TRI), sulfuric acid and aluminum sulfate, can generate sulfate pollution[36]. The TRI indicates that currently some proportion of these materials are placed in land disposal and underground wells. No doubt historically there was somewhat more casual disposal of these

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[34]U.S. EPA, An Analysis of State Superfund Programs: 50 State Study, 1993 Update: EPA 540/R-94/008.

[35]Waste Management, "Unified Ground Water Monitoring Program," in Proceedings of the MWWA Focus Conference on Midwestern Ground Watger Issues, April 21-23, 1987.

[36]It is interesting to note that aluminum sulfate, alum, is used as a coagulating agent to precipitate some materials from water.???

materials. Focusing on sulfuric acid, EPA identifies the following industries as releasing or transferring more than 1 percent of the sulfuric acid in 1988: chemicals, leather, stone/clay, primary metals, fabricated metals, electrical, transportation, and multiple codes. In 1988, almost 6,000 TRI forms were filed for sulfuric acid and aluminum sulfate. Ten percent of the TRI forms are assumed to be linked to a potential sulfate site. In addition, 2½ percent of the landfills are assumed to exceed 1,000 mg/l of sulfate.

The sites listed as "other" are thought to be particularly vulnerable to sulfate pollution and not likely to have been listed in the other categories. No reference has been found to identify a proportion of these sites that might require sulfate remediation. A somewhat arbitrary figure of 10 percent was used for these sites based on the documented concern about sulfate pollution from mining sites and coal burning facilities. This percentage was chosen as conservative level based on professional experience.

In addition to identifying the number of sites at a given MCL level, such as 500 mg/l, one must ask how the number of sites changes as the MCL level changes. The change in the number of sites is an important element in EPA's analysis of costs to public water systems[37]. EPA's data were used to characterize the change in the number of sites as the MCL level changes. This may be appropriate for a screening analysis of this type but there is no necessary reason why the distribution of water system sites should be similar to the distribution of remediation sites. It is likely that the water systems would have a lower frequency of occurrence of sulfates as it is at least an aesthetically undesirable characteristic.

Column 11 summarizes the screening estimate of the number of sites that may be vulnerable to additional costs from a sulfate standard. With an MCL of 500 mg/l it is possible that about 22,100 sites might be affected while at a standard of 2000 mg/l that figure might drop to about 1,300. While as a screening device, these estimates indicate the large potential for the rule to affect sites.

The remaining question is fundamental: what is the additional cost of treating sulfate given that EPA has already estimated the cost of treating sulfate at the point of use?

The scenario envisioned here is that even if point of use connections are protected by notices as proposed by EPA, it is a

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[37]WMA, Inc, "Regulatory Impact Analysis: National Primary Drinking Water Regulations-Sulfate," Prepared for the U.S. EPA, August 31, 1994, Exhibit 2-2.

plausible scenario that state and federal clean-up officials will demand remediation at the site due to actually or potentially affecting groundwater or surface water supplies that are used for drinking water. The choice of clean-up approaches may be more or less aggressive. Scenario 1 below assumes that the BAT technology specified by EPA for the proposed rule is used as an add-on to remediation sites. Scenario 2, based on actual scenarios developed with direct oversight by the EPA and the Utah Department of Environmental Quality, implies that more aggressive remediation strategies might be pursued to clean-up contaminated groundwater sources.

Scenario 1: Each site with sulfates is assumed to have to treat water for other purposes. The sulfate requirement is an add-on. Consequently, it is more like the BAT treatment using reverse osmosis that EPA estimated for community water systems (based on flow rates.) The EPA distribution of sites across flow rates (i.e. EPA's cost categories) is used to characterize the flow rates across remediation sites. As with the distribution of sites across contamination levels, there is no necessary link between the size of water supply systems and the flow rates at remediation sites. However, information on a large remediation site does carry over to one of the large, but observed, water supply system sizes[38]. EPA's cost analysis does not however, need to address the potential for treating an added volume of water as the MCL standard becomes more stringent. In contrast, at remediation sites, it may become necessary to treat a larger volume of water based on the larger area covered by a lower sulfate concentration contour. An adjustment of 33% is made to existing remediation sites as the standard is tightened[39]. The adjustment factor is identified in column 13 as the change in cost due to new volume.

The total cost for several MCL levels are reported in column 14. Column 15 adjusts that total for the number of states that currently list a sulfate standard of 250 mg/l for some part of their clean-up program. It is not known in detail how states currently enforce these provisions nor is it known how a new primary standard for sulfates, if it is established, will alter these state provisions. It is possible that raising sulfates to a primary standard will increase attention to the issue even in states with standards currently set at 250 mg/l. In any event, to account for these existing state standards, column 14 was decreased by 25 percent, the rounded proportion of stages with 250 mg/l

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[38]"Focused Feasibility Study for Sulfates in Ground Water Southwest Salt Lake County, Utah," Prepared for Kennecott Corporation, May, 1993.

[39]The adjustment factor is based on the cost estimates in "Focused Feasibility", op. cit.

standards, to arrive at the final estimate in column 15. The result is a cost estimate of $3.0 billion at the 500 MCL level and decreasing to $137 million at a 2000 MCL level.

Scenario 2: This scenario investigates the implications of a more aggressive EPA policy that seeks more active remediation of a contaminated groundwater source. Although still based on EPA estimates of BAT[40], an adjustment factor is used based on an actual sulfate case study. That adjustment factor expands the Scenario 1 cost by the difference between a "contain and treat" option (Option 4A and C low) and an "active restoration" scenario (Option 6A, B,C low) based on data used to develop Table 3. Engineering analysts revised the data underlying Table 3 to approximate the "sulfate only" costs. A cost expansion factor of 4.5 for 500 mg/l; 3.8 for 1000 mg/l and 2.5 for 2000 mg/l was used to generate the cost items in column 15.

The result of Scenario 2 are costs that could be approximately 12 billion dollars per year for an MCL of 500 mg/l down to $343 million per year for an MCL of 2000 mg/l. These costs include the downward adjustment for states with a 250 mg/l standard. Such large estimates may suggest here, as they also suggest for the case study in Southwest Salt Lake County, that active restoration strategies are unlikely to be affordable.

As reported in the introduction, these screening estimates using two different cost scenarios suggest that a primary drinking water standard of 500 mg/l may have an annual cost for site remediation on the order of several billion dollars. As the MCL becomes higher, fewer sites are affected and the estimates of additional remediation costs declines to several hundred million dollars per year for an MCL of 2000 mg/l for the two scenarios. These costs are likely to be higher than what would be observed in most years because it is assumed that all sites are being remediated concurrently. Phasing in remediation could ramp-up the annual cost to the estimates reported here to be followed by an extensive period of treatment and phase down.

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[40]Note that this does not imply full agreement with EPA's BAT estimates. However, the issue here is, even accepting EPA's cost estimate, are the omitted cost items of sufficient size that EPA is not reasonably informing decision-makers and the public.

APPENDIX–Table 1. SUMMARY OF STATE GROUNDWATER INFORMATION ON THE USE OF MCL'S*

State	Uses MCLs as a standard for drinking water aquifers	Uses MCLs as a standard for State CERCLA remediation	Uses MCLs as a standard for State groundwater remediation	Current listed sulfate standard	Comments
Alabama	yes	yes	yes	no list provided (1)	MCLs and Health Based Advisory concentrations use for corrective action, UST.
Alaska	yes	yes	yes (7)	250 mg/l	Interim policy while standards are developed–use MCLs as groundwater cleanup standards
Arizona	yes	yes (2)	yes (2)	not listed (3)	All new federal MCLs adopted for drinking water aquifers
Arkansas	yes	yes (2)	yes (2)	not listed	Standards based upon Primary Drinking Water Standards
California	yes (4)	yes	yes (4)	not listed	Highly decentralized program makes generalizations difficult
Colorado	yes	yes	yes	250 mg/l	Identified sulfates as a threshold odor criteria
Connecticut	yes	yes (2)	yes (2)	none	Standard based upon designated use
Delaware	yes (5)	yes (6)	yes	no list provided	For clean up standards, MCLs used in conjunction with technological limitations
Florida	yes	yes	yes	250 mg/l	In areas designated as G-I and G-II, groundwater must meet primary and secondary standards
Georgia	yes (5)	yes (7)	yes	250 mg/l	Standards based upon federal primary and secondary MCLs
Hawaii	no	yes (2)	no	no list provided	Remediation on a site-by-site basis
Idaho	yes	no	no	no list provided	Standards for clean up are under development
Illinois	yes	yes	yes	400 mg/l	Cannot exceed listed sulfate levels except for due to natural causes
Indiana	no	yes (2)	yes (2)	no list provided	Standards for public drinking water supplies after conventional treatment
Iowa	not specified	yes (2)	no	no list provided	No specific guidelines available
Kansas	yes	yes (2)	yes	250 mg/l	Listed as a KAL-Kansas Action Level for unacceptable long-term exposure
Kentucky	yes	yes (2)	no	no list provided	Only for groundwater used for drinking water, proposed for other clean ups
Louisiana	no	yes (2)	no	no list provided	No specific numeric standards–case-by-case
Maine	yes (5)	yes (2)	yes	250 mg/l	Used for areas classified as public drinking water supplies, which is currently the entire state
Maryland	yes	yes (2)	yes (2)	not listed	Can not exceed MCL levels outside of property boundaries
Massachusetts	yes	no	yes	250 mg/l	Used for Class I and Class II groundwater areas
Michigan	yes	yes (2)	yes	250 mg/l	Listed as an aesthetic drinking water value, but used for the clean up of groundwater in general

APPENDIX–Table 1. SUMMARY OF STATE GROUNDWATER INFORMATION ON THE USE OF MCL'S (cont'd)

State	Uses MCLs as a standard for drinking water aquifers	Uses MCLs as a standard for State CERCLA remediation	Uses MCLs as standards for State groundwater remediation	Current sulfate standard	Comments
Minnesota	yes	yes (2)	yes (8)	not listed	Listed contaminants are based upon Primary MCLs.
Mississippi	yes	yes (2)	yes (2)	not listed	State list is updated according to changes in the federal primary MCLs
Missouri	yes	yes (2)	yes (2)	not listed	State list is updated according to changed in the federal MCL listing
Montana	yes	yes (2)	yes (2)	not listed	New federal primary MCL listings are reviewed every three to five years
Nebraska	yes	no	yes	250 mg/l	New federal MCLs are incorporated by Nebraska annually
Nevada	yes	yes (2)	yes (2)	no list provided	MCLs evaluated with other criteria
New Hampshire	yes	yes (2)	yes	400 mg/l	Sulfate level based upon NH Bureau of Risk Assessment, in combination with federal levels.
New Jersey	yes	yes (2)	yes	250 mg/l	Sulfate MCL used for Class I and Class II groundwater.
New Mexico	yes	yes (2)	yes	600 mg/l	New Mexico program developed prior to the federal program. Sulfate criteria is aesthetic-based.
New York	yes	yes (2)	no	250 mg/l	Uses federal evaluation to assess for state program
North Carolina	yes	no	yes	250 mg/l	MCLs one of several criteria
North Dakota	no	no	no	no list provided	Lists only "EPA standards" and case-by-case evaluation
Ohio	yes	yes (2)	yes (2)	no list provided	MCLs are guidelines for remediation and clean up for all groundwater contamination
Oklahoma	no	no	no	not listed	Most groundwater addressed on case-by-case basis.
Oregon	yes	yes (2)	yes (2)	no list provided	Primary MCLs used unless strong evidence otherwise.
Pennsylvania	yes	yes	yes	250 mg/l	MCLs are secondary standard to background levels
Rhode Island	yes	yes (2)	no	not listed	State designates its own MCL levels using federal data.
South Carolina	yes	yes (2)	yes	250 mg/l	Sulfate a secondary standard for GB areas--currently the entire state
South Dakota	yes (5)	yes	yes	500 mg/l	Not applicable for recieving waters from a POTW
Tennessee	yes	yes (2)	yes (2)	not listed	No seperate groundwater standards have been promulgated.
Texas	no	yes (2)	yes (2)	not listed	RCRA and clean up standards based upon Primary MCLs.
Utah	yes	yes (2)	yes (2)	not listed	New federal MCLs are adopted through the Utah rulemaking process. Does not include secondary standards

APPENDIX–Table L SUMMARY OF STATE GROUNDWATER INFORMATION ON THE USE OF MCL'S (cont'd)

State	Uses MCLs as a standard for drinking water aquifers	Uses MCLs as a standard for State CERCLA remediation	Uses MCLs as a standard for State groundwater remediation	Current sulfate standard	Comments
Vermont	yes	yes (2)	yes (2)	250 mg/l	Has a 250 mg/l enforcement standard and a 125 mg/l preventive action limit
Virginia	yes	yes (2)	yes (2)	varies (9)	Groundwater standards not remediation goals.
Washington	yes	yes (2)	yes	250 mg/l	New federal MCLs automatically become Washington's standards.
West Virginia	yes	yes (2)	yes (2)	not listed	West Virginia standards must be at least as stringent as the federal regs. Applies only to primary MCLs.
Wisconsin	yes	yes	yes	250 mg/l	250 mg/l listed as the enforcement standard, with 125 mg/l as the preventive action limit.
Wyoming	yes	yes	yes	250 mg/l-3,000 mg/l	Varies based upon the use of the property

SUMMARY INFORMATION:

States using MCLs used as standard for drinking water aquifers:	43 states
States using MCLs for State CERCLA remediation (only primary standards):	13 states
States using MCLs for State CERCLA remediation (both primary and secondary):	44 states
States using MCLs for State groundwater programs (only primary standards):	23 states
States using MCLs for State groundwater programs (both primary and secondary):	17 states
Number of States with 250 mg/l standard:	17 states
Range of in-use sulfate standards:	250 mg/l-3000 mg/l

**This information to be used for advisory purposes only. Interested parties should consult the complete text of the relevant state regulations*

Sources: *"State Groundwater Regulation: Guide to Laws, Standards and Risk Assessment", Sally Benjamin, David Bellack, Bureau of National Affairs, 1994*

"An Analysis of State Superfund Programs: 50-State Study 1993 Update" EPA540/R 94/008

(1) No list for any groundwater standards provided.

(2) Does not exclude secondary MCLs, or is not clear that it includes secondary MCLs

(3) List for groundwater standards provided, but sulfate is not listed.

(4) Determined by local/regional regulatory bodies.

(5) For public wells only.

(6) Only if deemed appropriate to protect human health.

(7) Used as interim standards.

(8) Establishes state criteria based upon data used in proposed federal MCLs

(9) Varies based upon the physiographic province.

APPENDIX–Table 2. SUMMARY OF TYPES OF AFFECTED SITES

Federal Program		Total number of reported* sites	Number of sites with sulfate contamination	Percentage of sites
National Priority List (CERCLA/Superfund)		1302 (1)	8 (sulfate as primary contaminant) 193 (reference to sulfate in the text)	0.61% 14.82%
RCRA		464,000	588	>0.1%
RCRA landfills		46,947		37.5% (5) 2.5% (6) 52.3% (7)
Toxic Release Inventory	(8)	5,600		
State Program		**Total number of reported sites**		
State CERCLA/Superfund Program		101,796 (2) 41,091 (3) 45,698 (4)		
Other Types of Affected Sites		**Total number of reported sites**		
Mining	(9)	91,000		
Electric Utilities (coal fired)	(10)	2,000		

*Databases which were searched were defined based upon different criteria, as outlined in footnotes.

(1) Total number of Records of Decision for facilities which have sulfate remediation goals for their site. (Source: US EPA ROD database)

(2) Sites which are known or suspected of needing remediation (Source: An Analysis of State Superfund Programs: 50-State Update," 1993, EPA540/R-94/008).

(3) Sites which are identified as needing attention. (Source: An Analysis of State Superfund Programs: 50-State Update," 1993, EPA540/R-94/008).

(4) Sites which are on the state inventory or priority list. (Source: An Analysis of State Superfund Programs: 50-State Update," 1993, EPA540/R-94/008).

(5) Percentage of landfills with sulfate detected, based upon a study of 40 landfills, "Unified Ground Water Monitoring Program," Proceedings of the MWWA Focus Conference on Midwestern Ground Water Issues, April 21-23, 1987.

(6) Percentage of landfills with sulfate levels over 1000 mg/l according to reference in footnote (6).

(7) Percentage based upon conversations with Ohio EPA, Division of Solid Waste

(8) US EPA "Toxics in the Community, September 1990.

(9) US EPA, Inactive and Abandoned Underground Mines, (M. Baker, Inc.) June 1975. US Bureau of Mines, "Mining and Quarrying Trends in the Metals and Industrial Minerals Industries, 1991 Annual Report, Table 8; US Department of Energy, "Coal Industry Annual", 1993, Table 3. RCRA exempts mining waste (40 CFR 261.4(b)(7). This number is not of the estimated proportion in Federal and State CERCLA programs.

(10) Statistical Abstract of the US, 1994. Fly ash is exempted from RCRA (40 CFR 264(b)(4). Some states such as Ohio (DSW 0400.007) are newly including fly ash in water policies.

APPENDIX–Table 3. PRESENT WORTH COST SUMMARY*

Alternative Number		Present Worth Cost Range (in millions)
GW–1	No Active Response	N/A
GW–2	Source Control	N/A
GW–3	Source Control and Point of Use Management	$9.0
GW–4A	Source Control/Containment/Treatment/Reinjection	$215 – $245
GW–4B	Source Control/Containment/Treatment/Conveyance	$213 – $243
GW–4C	Source Control/Containment/Treatment/Extraction of Aquifer Safe Yield	$283 – $313
GW–5A	Source Control/Containment/Treatment/Reinjection/Point of Use Management	$224 – $254
GW–5B	Source Control/Containment/Treatment/Conveyance/Point of Use Management	$217 – $248
GW–5C	Source Control/Containment/Treatment/Extraction of Aquifer Safe Yield/Point of Use Management	$284 – $314
GW–6A	Source Control/Active Restoration for High Sulfate Zone	$548 – $637
GW–6B	Source Control/Active Restoration for 1,000 mg/L Sulfate Zone	$684 – $934
GW–6C	Source Control/Active Restoration for 500 mg/L Sulfate Zone	$916 – $1,298
GW–7A	Source Control/Active Restoration for High Sulfate Zone/Point of Use Management	$557 – $646
GW–7B	Source Control/Active Restoration for 1,000 mg/L Sulfate Zone/Point of Use Management	$693 – $943
GW–7C	Source Control/Active Restoration for 500 mg/L Sulfate Zone/Point of Use Management	$925 – $1,307
GW–8A	Source Control/Partial Active Restoration for 1,000 mg/L Sulfate Zone	$560 – $591
GW–8B	Source Control/Partial Active Restoration for 500 mg/L Sulfate Zone	$640 – $671
GW–9A	Source Control/Partial Active Restoration for 1,000 mg/L Sulfate Zone/Point of Use Management	$569 – $599
GW–9B	Source Control/Partial Active Restoration for 500 mg/L Sulfate Zone/Point of Use Management	$649 – $680

* Reproduced from "Focused Feasibility Study for Sulfates in Ground Water, Southwest Salt Lake County, Utah," Prepared for Kennecott Corporation, Salt Lake City, Utah, May 1993, Project No. 23080.

APPENDIX–Table 4. DETAIL OF SITES IMPACTED BY SULFATE RULE

MCL level	Federal CERCLA	State CERCLA	RCRA	Other M//E*	Total
Total Number of Sites in Program**					
	(2)	(3)	(4)	(5)	(6)
	1,300	102,000	464,000	93,000	660,300
Potential Number of Sites with Sulfate**					
	(7)	(8)	(9)	(10)	(11)
500	91	7,140	5,539	9,300	22,070
800	35	2,713	2,105	3,534	8,387
1000	22	1,714	1,329	2,232	5,297
2000	5	428	332	558	1,324

*(Net Mining and Electric Utility).

**See text for further explanation.

APPENDIX–Table 5. REMEDIATION COST ESTIMATES

SCENARIO 1

MCL level	Cost when new in system	Change in cost new volume	Total cost	Total Cost with Adjustment for 250 MCL standard
	(12)	(13)	(14)	(15)
500 mg/l	$3,681,760,074	$340,173,112	$4,021,933,186	$3,016,449,890
800 mg/l	$1,248,452,810	$136,069,245	$1,384,522,055	$1,038,391,541
1000 mg/l	$731,555,079	$54,866,631	$786,421,710	$589,816,283
2000 mg/l	$182,888,770		$182,888,770	$137,166,577

SCENARIO 2

MCL level	Total Cost	Total Cost with Adjustment for 250 MCL standard
	(16)	(17)
500 mg/l	$16,567,920,335	$12,425,940,251
800 mg/l	$8,272,806,620	$6,204,604,965
1000 mg/l	$2,779,909,301	$2,084,931,976
2000 mg/l	$457,221,925	$342,916,443

MARGINAL BENEFIT ESTIMATES WITH MODIFIED MEDICAL ESTIMATES

Scenario BE1. Sulfate exposure level between 500 and 600 mg/l

	Resident Infants Outpatient Cases	Resident Infants Hospitalized Cases	Traveling Infants Outpatient Cases	Traveling Infants Hospitalized Cases	Traveling Adults Outpatient Cases	New-Resident Adults Outpatient Cases	TOTAL
Exposed population	6,615	6,615	5,963	5,963	459,871	86,552	559,000
% With Illness	31%	31%	31%	31%	31%	31%	
% of Ill Obtaining Medical Attention	10%	1%	10%	1%	20%	20%	
Affected Population	207	21	187	19	28,825	5,425	34,684
Cost Estimates							
Doctor Charges	$55		$55		$55	$55	
Medication Charges	$11		$11		$11	$11	
Hospital cost per day		$750		$750			
Days lost per case	1	2	1	2	1	1	
Value of each travel day lost			$55	$55	$55		
Hours lost per case	8	16	8	16	8	8	
Value of each hour lost	$10.33	$10.33	$10.33	$10.33	$10.33	$10.33	
Value per case avoided	$149	$1,665	$204	$1,775	$204	$149	
Estimated Benefits	$30,815	$34,523	$38,055	$33,175	$5,869,924	$806,391	6,812,883

Scenario BE2. Sulfate exposure level between 600 and 700 mg/l

	Resident Infants Outpatient Cases	Resident Infants Hospitalized Cases	Traveling Infants Outpatient Cases	Traveling Infants Hospitalized Cases	Traveling Adults Outpatient Cases	New-Resident Adults Outpatient Cases	TOTAL
Exposed population	2,627	2,627	2,368	2,368	182,632	34,373	222,000
% With Illness	37%	37%	37%	37%	37%	37%	
% of Ill Obtaining Medical Attention	10%	1%	10%	1%	20%	20%	
Affected Population	96	10	87	9	13,389	2,520	16,110
Cost Estimates							
Doctor Charges	$55		$55		$55	$55	
Medication Charges	$11		$11		$11	$11	
Hospital cost per day		$750		$750			
Days lost per case	1	2	1	2	1	1	
Value of each travel day lost			$55	$55	$55		
Hours lost per case	8	16	8	16	8	8	
Value of each hour lost	$10.33	$10.33	$10.33	$10.33	$10.33	$10.33	
Value per case avoided	$149	$1,665	$204	$1,775	$204	$149	
Estimated Benefits	$14,313	$16,036	$17,676	$15,410	$2,726,550	$374,565	3,164,550

APPENDIX–Table 6. MARGINAL BENEFITS CALCULATIONS

Scenario BE3. Sulfate exposure level of 700 to 800 mg/l

	Resident Infants Outpatient Cases	Resident Infants Hospitalized Cases	Traveling Infants Outpatient Cases	Traveling Infants Hospitalized Cases	Traveling Adults Outpatient Cases	New-Resident Adults Outpatient Cases	TOTAL
Exposed population	1,100	1,100	992	992	76,508	14,399	93,000
% With Illness	42%	42%	42%	42%	42%	42%	
% of Ill Obtaining Medical Attention	10%	1%	10%	1%	20%	20%	
Affected Population	47	5	42	4	6,475	1,219	7,791
Cost Estimates							
Doctor Charges	$55		$55		$55	$55	
Medication Charges	$11		$11		$11	$11	
Hospital cost per day		$750		$750			
Days lost per case	1	2	1	2	1	1	
Value of each travel day lost			$55	$55	$55		
Hours lost per case	8	16	8	16	8	8	
Value of each hour lost	$10.33	$10.33	$10.33	$10.33	$10.33	$10.33	
Value per case avoided	$149	$1,665	$204	$1,775	$204	$149	
Estimated Benefits	$6,922	$7,755	$8,548	$7,452	$1,318,577	$181,142	1,530,396

Scenario BE4. Sulfate exposure level of 800 to 900 mg/l

	Resident Infants Outpatient Cases	Resident Infants Hospitalized Cases	Traveling Infants Outpatient Cases	Traveling Infants Hospitalized Cases	Traveling Adults Outpatient Cases	New-Resident Adults Outpatient Cases	TOTAL
Exposed population	2,023	2,023	1,824	1,824	140,676	26,476	171,000
% With Illness	48%	48%	48%	48%	48%	48%	
% of Ill Obtaining Medical Attention	10%	1%	10%	1%	20%	20%	
Affected Population	98	10	88	9	13,557	2,552	16,312
Cost Estimates							
Doctor Charges	$55		$55		$55	$55	
Medication Charges	$11		$11		$11	$11	
Hospital cost per day		$750		$750			
Days lost per case	1	2	1	2	1	1	
Value of each travel day lost			$55	$55	$55		
Hours lost per case	8	16	8	16	8	8	
Value of each hour lost	$10.33	$10.33	$10.33	$10.33	$10.33	$10.33	
Value per case avoided	$149	$1,665	$204	$1,775	$204	$149	
Estimated Benefits	$14,493	$16,237	$17,898	$15,603	$2,760,721	$379,259	3,204,210

APPENDIX–Table 6. MARGINAL BENEFITS CALCULATIONS

Scenario BE3: Sulfate exposure level of 900 to 1000 mg/l

	Resident Infants Outpatient Cases	Resident Infants Hospitalized Cases	Traveling Infants Outpatient Cases	Traveling Infants Hospitalized Cases	Traveling Adults Outpatient Cases	New-Resident Adults Outpatient Cases	TOTAL
Exposed population	1,834	1,834	1,653	1,653	127,513	23,999	155,000
% With Illness	54%	54%	54%	54%	54%	54%	
% of Ill Obtaining Medical Attention	10%	1%	10%	1%	20%	20%	
Affected Population	99	10	89	9	13,798	2,597	16,602
Cost Estimates							
Doctor Charges	$55		$55		$55	$55	
Medication Charges	$11		$11		$11	$11	
Hospital cost per day		$750		$750			
Days lost per case	1	2	1	2	1	1	
Value of each travel day lost			$55	$55	$55		
Hours lost per case	8	16	8	16	8	8	
Value of each hour lost	$10.33	$10.33	$10.33	$10.33	$10.33	$10.33	
Value per case avoided	$149	$1,665	$204	$1,775	$204	$149	
Estimated Benefits	$14,750	$16,525	$18,216	$15,880	$2,809,802	$386,001	3,261,175

APPENDIX--Table 6. MARGINAL BENEFITS CALCULATIONS

MARGINAL BENEFIT ESTIMATES USING TOLLEY ET. AL.

Scenario CV1. Modification with new probability of illness at average sulfate exposure level of 500 to 600 mg/l

	Resident Infants Outpatient Cases	Resident Infants Hospitalized Cases	Traveling Infants Outpatient Cases	Traveling Infants Hospitalized Cases	Traveling Adults Outpatient Cases	New-Resident Adults Outpatient Cases	TOTAL
Exposed population	6,615	6,615	5,963	5,963	459,871	86,552	559,000
% With Illness	31%	31%	31%	31%	31%	31%	
% of Ill Obtaining Medical Attention	10%	1%	10%	1%	20%	20%	
Affected Population	207	21	187	19	28,825	5,425	34,684
Cost Estimates							
Mild food poisoning per day	$80		$80		$80	$80	
Days lost per case	1	2	1	2	1	1	
Severe food poisoning per day		$130		$130			
Value per case avoided	$80	$260	$80	$260	$80	$80	
Estimated Benefits	$16,585	$5,390	$14,950	$4,859	$2,306,000	$434,010	$2,781,794

Scenario CV2. Modification with new probability of illness at average sulfate exposure level of 500 to 700 mg/l

	Resident Infants Outpatient Cases	Resident Infants Hospitalized Cases	Traveling Infants Outpatient Cases	Traveling Infants Hospitalized Cases	Traveling Adults Outpatient Cases	New-Resident Adults Outpatient Cases	TOTAL
Exposed population	2,627	2,627	2,368	2,368	182,632	34,373	222,000
% With Illness	37%	37%	37%	37%	37%	37%	
% of Ill Obtaining Medical Attention	10%	1%	10%	1%	20%	20%	
Affected Population	96	10	87	9	13,389	2,520	16,110
Cost Estimates							
Mild food poisoning per day	$80		$80		$80	$80	
Days lost per case	1	2	1	2	1	1	
Severe food poisoning per day		$130		$130			
Value per Case Lost	$80	$260	$80	$260	$80	$80	
Estimated Benefits	$7,704	$2,504	$6,944	$2,257	$1,071,126	$201,596	$1,292,129

APPENDIX–Table 6. MARGINAL BENEFITS CALCULATIONS

Scenario CV3. Modification with new probability of illness at average sulfate exposure level of 700 to 800 mg/l

	Resident Infants Outpatient Cases	Resident Infants Hospitalized Cases	Traveling Infants Outpatient Cases	Traveling Infants Hospitalized Cases	Traveling Adults Outpatient Cases	New-Resident Adults Outpatient Cases	TOTAL
Exposed population	1,100	1,100	992	992	76,508	14,399	93,000
% With Illness	42%	42%	42%	42%	42%	42%	
% of Ill Obtaining Medical Attention	10%	1%	10%	1%	20%	20%	
Affected Population	47	5	42	4	6,475	1,219	7,791
Cost Estimates							
Mild food poisoning per day	$80		$80		$80	$80	
Days lost per case	1	2	1	2	1	1	
Severe food poisoning per day		$130		$130			
Value per Case avoided	$80	$260	$80	$260	$80	$80	
Estimated Benefits	$3,726	$1,211	$3,358	$1,091	$518,003	$97,493	$624,882

Scenario CV4. Modification with new probability of illness at average sulfate exposure level of 800 to 900 mg/l

	Resident Infants Outpatient Cases	Resident Infants Hospitalized Cases	Traveling Infants Outpatient Cases	Traveling Infants Hospitalized Cases	Traveling Adults Outpatient Cases	New-Resident Adults Outpatient Cases	TOTAL
Exposed population	2,023	2,023	1,824	1,824	140,676	26,476	171,000
% With Illness	48%	48%	48%	48%	48%	48%	
% of Ill Obtaining Medical Attention	10%	1%	10%	1%	20%	20%	
Affected Population	98	10	88	9	13,557	2,552	16,312
Cost Estimates							
Mild food poisoning per day	$80		$80		$80	$80	
Days lost per case	1	2	1	2	1	1	
Severe food poisoning per day		$130		$130			
Value per Case avoided	$80	$260	$80	$260	$80	$80	
Estimated Benefits	$7,800	$2,535	$7,031	$2,285	$1,084,550	$204,122	$1,308,323

APPENDIX–Table 6. MARGINAL BENEFITS CALCULATIONS

Scenario CVS. Modification with age probability of illness at average sulfate exposure level of 900 to 1000 mg/l

	Resident Infants Outpatient Cases	Resident Infants Hospitalized Cases	Traveling Infants Outpatient Cases	Traveling Infants Hospitalized Cases	Traveling Adults Outpatient Cases	New-Resident Adults Outpatient Cases	TOTAL
Exposed population	1,834	1,834	1,653	1,653	127,513	23,999	155,000
% With Illness	54%	54%	54%	54%	54%	54%	
% of Ill Obtaining Medical Attention	10%	1%	10%	1%	20%	20%	
Affected Population	99	10	89	9	13,798	2,597	16,602
Cost Estimates							
Mild food poisoning per day	$80		$80		$80	$80	
Days lost per case	1	2	1	2	1	1	
Severe food poisoning per day		$130		$130			
Value per Case avoided	$80	$260	$80	$260	$80	$80	
Estimated Benefits	$7,939	$2,580	$7,156	$2,326	$1,103,831	$207,751	$1,331,583

APPENDIX

PROCEDURES

We performed a comprehensive literature search in addition to articles provided to us by the American Mining Congress and articles requested from the EPA Sulfate Docket. The search parameters were defined as "sulfates" and "drinking water" since, and including 1990. A comprehensive search was performed by Ms. Menitove of the electronic sources listed in Appendix A. These papers were directly downloaded into a special database system, INMAGIC, which was specifically designed as a textual retrieval, searching and reporting software. Additional possibly relevant papers suggested by the American Mining Congress or listed in the EPA docket were added to the INMAGIC file. The database contains over 300 papers. The majority of the articles dealt with metal sulfate toxicity. As principal investigator, Dr. Reid reviewed the titles and abstracts on line and selected the relevant papers for evaluation. The papers were retrieved by Ms. Menitove and distributed to Dr's Buncher and Farrow. For the most-part, original papers were read and discussed rather than secondary sources. Meetings were held on a weekly basis at the University of Cincinnati to discuss issues, in addition to other telephone and face-to-face communication. The intent, realized, was to interact synergistically to produce this report, supported by all members of the team.

INTERVIEWS WITH MEDICAL SPECIALISTS:

In addition, we interviewed three physicians selected for their knowledge and reputation in the areas of interest. These were Ralph A. Giannella, M.D., Professor, Internal Medicine-Digestive Diseases, Director of Digestive Diseases and Mitchell Cohen, M.D, Associate Professor, Pediatric Gastroenterology, Associate Professor of Internal Medicine, and Garry A Neidich, M.D., Department of Pediatrics, Sioux City , North Dakota. Drs. Reid, Buncher and Farrow were present at the interviews with Drs. Giannella and Cohen and posed specific questions and scenarios for the physicians. Dr. Reid conferred with Dr. Neidich by phone. The information gained from these physicians is integrated into this report.

QUALIFICATIONS OF REVIEWERS

DR. JON REID: Dr. Reid is a board certified toxicologist with over 20 years practical experience in the field, both with industry, consulting and academics. He is a Research Assistant Professor in the Department of Environmental Health in the Medical College, University of Cincinnati. He is also President of the Ohio Chapter of the Society of Risk Analysis and Council Member of the Ohio

Valley Society of Toxicology. Dr. Reid's commitments at the University of Cincinnati involve teaching and research. His teaching commitments include courses involving human health risk assessment in the toxicology and industrial hygiene programs and in the continuing education programs. Research commitments involve biodegradation studies utilizing engineered and natural microorganisms. Dr. Reid is also President of the Risk Assessment Center of Cincinnati, a non-profit organization which performs risk assessments for government, individuals and industry. While at the University he has been instrumental in a number of risk assessments including evaluating a Vermiculite mine in Montana, etc. Before coming to the University in 1989, Dr. Reid was Vice President of ENSR Corporation, a national environmental consulting firm, where he was responsible for Toxicology, Risk Assessment, Litigation Support and Information Services. In this capacity he managed and performed many risk assessments including a Chromium contamination problem for a utility company in California, etc. Prior to ENSR, Dr. Reid was Director of Toxicology for SRI International (formerly Stanford Research Institute) where he performed toxicological studies for various clients including evaluation of a chemical component used in uranium refinement procedures. Prior to SRI, he was the first Director of the Exxon Toxicology Laboratory where he performed numerous animal and in-vitro studies. Dr. Reid is experienced and capable of evaluating the studies with regard to sulfates.

DR. SCOTT FARROW: Dr. Farrow is an environmental economist with 13 years of experience in applying quantitative economic analysis to environmental and natural resource programs. He has worked as a consultant, professor and government manager. As a professor, Dr. Farrow was a member of the faculty of the Heinz School of Public Policy at Carnegie Mellon University for 12 years. While at Carnegie Mellon, Dr. Farrow taught environmental and natural resource regulation and policy, microeconomics, econometrics (the integration of statistics and economics) and benefit-cost analysis. From 1990-1992 Dr. Farrow served as an Associate Director and senior economist of the White House Council on Environmental Quality (CEQ). At CEQ he was involved in the economic evaluation of proposals to reauthorize the Clean Water Act, developing the National Energy Strategy, the President's Commission on Environmental Quality, the Executive Office Review of the Clean Air Act regulations, and numerous other tasks. Several Ph.D. economists reported to Dr. Farrow in this position. In 1994 Dr. Farrow joined Dames & Moore where he has performed consulting services for national and international clients including the development of economics based regulatory proposals for the government of the Czech Republic. He is listed in Who's Who in the East and in Industry and Finance. He is author of a book on oil and gas management and of numerous articles on mining, environmental economics and policy. Dr. Farrow has a working

knowledge of Spanish and has traveled to Russia and the Czech Republic to carry out assignments.

DR. RALPH BUNCHER: Dr. Buncher is Professor of Epidemiology and Biostatistics and Director of the Division of Epidemiology and Biostatistics in the Department of Environmental Health, Medical College, University of Cincinnati. He is also Professor of Experimental Medicine in the College of Medicine and was Director of the University of Cincinnati Edward A Gall Neoplastic Disease Registry. Before coming to the University of Cincinnati he was Chief Biostatistician for Merrell-National Laboratories, Division of Richardson-Merrell. Dr. Buncher is a graduate of Harvard University with a Sc.D. in Biostatistics and Epidemiology, is the author of numerous publications and holds many honors.

MS. SYMIE MENITOVE: Ms. Menitove is a Senior Associate and Library Supervisor for the Department of Environmental Health with 9 years of biomedical database searching experience. She holds an M.L.S. (Master of Library Science) from the University of Wisconsin-Milwaukee. She has been a professional librarian since 1986. Ms. Menitove's responsibilities at the University of Cincinnati include total management of the Environmental Health Library, assistance in bibliographic research for faculty and students and teaching in bibliographic research.

Sulfate: Page C-75

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VIII
999 18th STREET - SUITE 500
DENVER, COLORADO 80202-2466

APR 1 1994

Ref: 8WM-DW

MEMORANDUM

SUBJECT: Sulfate Regulation

FROM: Max H. Dodson
Director
Water Management Division

TO: James R. Elder
Director
Office of Ground Water and Drinking Water

Region 8 is concerned about the lack of acknowledgement of the weakness of the data supporting the draft sulfate regulation. Our position is that the current draft regulation exaggerates the potential health effects of sulfate. As a result EPA is likely to cause a large economic burden on public water supplies without commensurate public health protection. We believe that new scientific information supports a much higher standard for sulfate which will be less burdensome to public water systems.

Sulfate was originally included in the Phase V regulation with a proposed standard of 400 or 500 mg/l. The draft final regulation contained 500 mg/l as the final MCL. The only data available on the health effects of sulfate was that from Chien et al. (1968) and Peterson (1951). Region 8 supported the 500 mg/l standard (but not the implementation aspects) in the draft final Phase V rule. We think the situation is now different.

Chien et al. reported case histories of three babies who experienced diarrhea when infant formula was prepared with water containing sulfate at 630, 720, or 1150 mg/l. Peterson (1951) reported on a survey he conducted in North Dakota to determine whether water with high sulfate has a laxative effect. After reviewing 300 completed survey forms he concluded "...waters with 600 to 750 ppm sulfates should be looked upon with suspicion as they may or may not be laxative. Over 750 ppm sulfates is generally a laxative water and below 600 ppm sulfates would be considered safe."

The other expressed concern in the original Phase V notice and the recent draft was the possibility of dehydration in infants and the elderly caused by sulfate. This concern was apparently supported by the use of sulfate containing preparations as cathartic agents in people. These preparations contain concentrated sulfate salts which are consumed with only a

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small amount of water (usually only one eight ounce glass) as a "chaser." We believe this bolus dosing is not relevant to the dosing received by the customer of a public water supply.

In 1992 OST convened a panel of outside experts (Cole, 1992) to review the data supporting EPA's regulation of sulfate. The general conclusion of the panel was that the Chien study was weaker than originally thought because the researchers did not have information about the composition of the infant formula used. The panel raised the possibility that hyperosmolality of the infant formula could have contributed to the observed diarrhea. The panel concluded, and OST concurred, that the Chien study should only be used in a qualitative way. The panel also recommended some specific research to provide more definitive information on the dose-response relationship for sulfate. EPA sponsored some of this research. (The preliminary results are discussed below.)

In Region 8's view, therefore, there is no credible quantitative information supporting the 500 mg/l standard. Chien et al. provides only qualitative information, Peterson (1951) qualifies only as anecdotal information, and the information on sulfate-containing cathartics provide a non-comparable dosing situation.

New data are available that should be included in the draft regulation. Veenhuizen et al. (1992) published a study on the effect of sulfate on the incidence of diarrhea and weight gain in piglets. Weaned pigs (28 days of age) were given water containing increasing concentrations of sulfate salts (600, 1200, or 1800 mg/l). There was an observed increase in diarrhea at the 1800 mg/l dose, but "except for an increase in fecal moisture content (not associated with pathogenic diarrhea) concentrations of up to 1800 mg of sodium, magnesium, or a combination of sodium and magnesium sulfate/l had no adverse effect on nursery pig performance."

Of more importance are the recent studies in humans and piglets conducted under a cooperative agreement between EPA's Health Effects Research Laboratory in North Carolina and the University of North Carolina School of Medicine and the Department of Animal Science, North Carolina State University. It should be noted that these studies have only recently been completed and the results should be considered preliminary. The studies, of which there were two, are currently undergoing peer review. The first involved ten adult volunteers and demonstrated that there was no significant laxative effect observed in volunteers who drank water containing up to 1200 milligrams per liter of sulfate. The second study, involving baby pigs, demonstrated that clinically significant diarrhea was not observed until concentrations of sulfate at or above 1800

milligram per liter were ingested. We urge that these new studies be written-up in a form that can be cited in the proposed sulfate regulation.

-- Finally, we think it is incorrect to make statements about sulfate potentially causing significant dehydration. The effects of sulfate are very different from the effects, for example, of enterotoxigenic bacteria (those bacteria which cause profuse water loss from the mucosal surface of the intestinal tract) or the cathartic effects of a bolus dose of sulfate salts. In these cases water is actively secreted from the mucosal cells into the lumen of the intestine either because of the toxin produced by the bacteria or to dilute the very high concentration of sulfate salts. These situations can cause dehydration if the condition persists.

The mechanism of action of sulfate from drinking water is very much different. Here sulfate causes retention of water in the lumen of the intestine because of a difference in osmotic pressure between the contents of the lumen and the mucosal tissues. Because less water is absorbed from the lumen, the contents of the lumen increase in bulk by an amount equal to the volume of water retained. It is unlikely, however, that significant water amount of water will be lost from the mucosal cells.

The sulfate criteria document makes reference to the amount of water retained by sulfate ("8 grams of sulfate retains 120 ml of water", Modell, W., Schild, H. O., and Wilson, A., 1976, Applied Pharmacology. American Edition, Philadelphia, PA., W. B. Saunders Company). Assuming this statement is correct, an adult drinking 2 liters of water containing 1000 mg/l sulfate will ingest 2 grams of sulfate which will retain 30 ml of water, or approximately 1.5% of the adult's normal consumption of water. Similarly, a child drinking 1 liter of water containing 1000 mg/l sulfate will ingest 1 gram of sulfate which will retain 15 ml of water, or approximately 1.5% of the child's normal consumption of water. This loss of available water will not cause any significant degree of dehydration in any person.

Using the arithmati· described above, the increase in fecal bulk due to retained water in an adult will be approximately 30 ml. This will amount to about a 50% increase in the normal volume of the feces (approximately 60 ml for an adult, according to the Modell reference in the sulfate criteria document). For a child the increase in fecal bulk due to retained water will be approximately 15 ml, or a doubling of the normal volume (15 ml) of the feces. While this may be mildly uncomfortable and alarming to the adult or the parent of the child, THIS IS NOT A PATHOLOGICAL CONDITION.

A Sulfate Workgroup meeting is being scheduled for mid-April. At that time, we will bring this issue before the Workgroup to review the current information and attempt to gain consensus on the best course of action to follow. I will keep you informed as to how things go.

Attachments:
1. Peterson study
2. Chien et al. study
3. EPA Expert Panel report
4. Veenhuizen et al. study

cc: Tudor T. Davies, OST (without attachments)
Sulfate Workgroup Members (without attachments)
Drinking Water Branch Chiefs (without attachments)

Dr. Charles O. Abernathy

Filename: epacons.ult
Filedate: August 14, 1992

INFANTILE GASTROENTERITIS DUE TO HIGH-SULFATE WATER: A CRITICAL ASSESSMENT

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Prepared for:

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OBJECTIVE

A publication by Chien et al [1] suggested that the sulfate content of well water used to prepare infant formulas was the predominant cause of diarrhea in 3 children aged 10 months (case 1), 12 months (case 2), and 5 months (case 3). This assessment is a critical re-examination of the evidence, the conclusions and the limitations imposed by prevailing knowledge at the time the study was performed.

THE EVIDENCE

Chien et al [1] describe their patients in a Case Report format appearing in the Canadian Medical Association Journal in 1968. All 3 cases occurred in Saskatchewan, on the Canadian prairie, where wells are a common source of drinking water and the ground water is known to have variable but commonly high total dissolved solids. All 3 cases were said to have diarrhea without vomiting which was related to the preparation of formulas with well-water that was subsequently analyzed by the Provincial Laboratory.

In case 1, the formula was powdered milk but of unspecified type. In case 2, no intake was specified. In case 3, it was also powdered milk, also of unspecified type.

In all 3 cases, a microbial origin for the diarrhea was considered and laboratory investigations appropriate for the problem were ordered. There is no evidence that viral gastroenteritis was considered in the differential. However, it is also stated that the water was boiled for an unspecified length of time. This is used as evidence that the water was unlikely to contain bacterial or parasitic pathogens, but the effect of boiling on the mineral concentration in the water actually used for formula preparation is not considered.

The mineral content of the water sources given by Chien et al [1] is reproduced in Table 1. From this data, approximate osmolarities are calculated.[1] However, the differences are not significant in terms of the issue raised by this assessment.

In both cases receiving formula, the water would add significantly (81, 57 and 55 mOsm/L, respectively) to the final osmolarity of the formula.

CONCLUSIONS

From the data, Chien et al [1] conclude that the sulfate content is the predominant cause of the diarrhea, arguing that their 3 cases differ more widely than the content of other minerals with similar potentially toxic properties--notably magnesium and sodium. They also exclude all microbial pathogens on limited evidence and cite studies by the United States

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[1] Osmolarity is used here where osmolality is the chemically correct term [3].

Department of Health, Education and Welfare, Public Health Service, to the effect that water with sulfate greater than 400 mg/L should be "regarded as unsuitable for infant feedings". In their decision, they approach the infant sulfate intake question by comparison with a single adult dose. The cathartic effect of a single large bolus of sulfate salt is presented as equivalent to use of water containing 300 mg/L for infant formulas. Nowhere in the argument is the effect of osmolarity, or more properly, hyperosmolarity raised.

PREVAILING KNOWLEDGE & THE ROLE OF OTHER CONTRIBUTING FACTORS

In 1968, formula feeding was in vogue and many North American parents were pleased with this alternative to the apparent mess and inconvenience of breast feeding. Subsequently, complications due to inadequate regulation of formula manufacture, particularly relating to electrolyte content and overall osmolarity, led to adoption of appropriate regulatory standards, primarily introduced by the FDA [2-5].[2] In that context, assessment of formula feeding by Saskatchewan mothers may have been much more complex, since unknown amounts of electrolyte and osmotically active solute would be added to formulas that were essentially unregulated. The alternatives, breast milk and cow milk, are relatively low in electrolytes and relatively constant (300 ± 2.9 and 288 mOsm/kg H_2O respectively) in their overall solute content.

Thus, in the preparation of formulas by the Saskatchewan families, the reduction in overall solute content resulting from the use of distilled water or an alternate low-solute water supply may well have resulted in reduction of osmolarity to within the currently recommended limit (≤ 400 mOsm/kg). Thus, there are *reasonable doubts as to whether ground water with more than 400 mg/L of sulfate alone can be considered sufficient to account entirely for the diarrhea described by Chien et al* [1]. Similarly, the possibility of viral gastroenteritis is contributory is not rigorously excluded.

SUMMARY

The report by Chien et al [1] suggests that high sulfate water may have been contributory to gastroenteritis in 3 Saskatchewan infants. It does not provide a reasonable basis for the conclusion that any water containing more than 400 mg/L of sulfate is hazardous to infant health. The recommendation that it is not suitable for infant feedings may still be valid for that time (1968), but that recommendation is based on feeding practices and knowledge now a

[2] It has more recently been reported that the addition of other hyperosmolar solutions (as part of oral medications) to infant formulas have caused similar problems [6].

quarter century out of date. Recommendations should be re-evaluated in light of current practices in those same towns today.

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TABLE

Approximate
Electrolyte Content and Estimated Osmolarity
of Drinking Water[1]

Solute	Approx MW	WHO Limits		Case 1		Case 2		Case 3	
		mg/L	mOsm/L	mg/L	mOsM/L	mg/L	mOsM/L	mg/L	mOsm/L
Calcium	40	200	5	8	0.2	232	5.8	210	5.3
Magnesium	24	150	6.3	3	0.1	124	5.2	130	5.4
Sodium	23	NG*	NG	1000	43.5	420	18.3	340	14.7
Iron	56	1.0	< 0.1	0.1	< 0.1	3.1	< 0.1	0.4	< 0.1
Manganese	55	0.5	< 0.1	?	< 0.1	2.0	< 0.1	0.2	< 0.1
Sulfate	96	400	4.2	720	7.5	1150	12.0	630	6.6
Chloride	35	600	17	615	17.6	230	6.6	330	9.4
Bicarbonate	61	NG	NG	775	12.7	589	9.7	832	13.6
Nitrate	62	45	0.7	0.1	< 0.1	2.0	< 0.1	1.0	< 0.1
Total	-	-	33.2	-	81.6	-	57.6	-	55.0

NG = Not Given

[1] Adapted from Chien et al [1]

STATEMENT OF RICHARD R. MONSON, M.D., SC.D.

I am a physician and professor in the Department of Epidemiology, Harvard School of Public Health, Boston, Mass. A copy of my curriculum vitae is attached to this statement.

I have reviewed numerous materials in connection with the Environmental Protection Agency's recommendation to establish a maximum contaminant level goal and maximum contaminant level for sulfate of 400 or 500 mg/l. In particular, I have reviewed the 1990 EPA proposal set forth at 55 Federal Register 30370 (July 25, 1990) and its supporting documents, including the Final Draft Drinking Water Criteria document, the July 17, 1989 Science Advisory Board comments, the Economic Impact Analyses and Addendum, the Technologies and Cost document and the Occurrence and Exposure Assessment document. I have also reviewed certain documents relating to the 1985 discussion by EPA concerning sulfate levels contained at 50 Federal Register 46979-46980 (Nov. 13, 1985), including the Final Draft for Drinking Water Criteria document on sulfate, the Environmental and Health Effects Assessment (first draft), Summary of Comments/Responses to Proposed Sulfate Levels and Comments of the American Mining Congress. I have also reviewed the EPA comments on sulfate contained at 52 Federal Register 25726 (July 8, 1987). In addition, I have reviewed miscellaneous literature relating to the impact of sulfate in general. In particular, I reviewed the 1968 Canadian Medical Association Journal article entitled "Infantile Gastroenteritis Due to Water with High Sulfate Content"; Guidelines for Canadian Drinking Water Quality, 1978; the World Health Organization Guidelines, 1984; Evaluation of Military Field Quality: Vol. 4; Health Criteria and Recommendations for Standards, Chapter 6, February 1988, by

the Lawrence Livermore National Laboratory; Water Supply in Health (Proceedings of an International Symposium 27-29 August 1980), edited by H. Van Lelvyveld and B.C.J. Zoeteman; Drinking Water and Health, published by the National Academy of Sciences, 1977 and 1982; Appendix B to Physiological Effects of the Consumption of Saline Drinking Water by Edward W. Moore in 1952; and the 1951 Peterson article entitled "Sulfates in Drinking Water", among others.

From my review of these materials, it appears that one of the primary bases for the proposed sulfate MCLG and MCL is the three reported cases of diarrhea in infants discussed in the 1968 Canadian Medical Association Journal article entitled "Infantile Gastroenteritis Due to Water with High Sulfate Content". The analysis connecting these anecdotal experiences to the current recommendation stretches the bounds of reality. While the case reports provide reasonable evidence that the local groundwater was the cause of diarrhea in some infants who ingested the water either directly or in formula, all waters contained high levels of total dissolved solids as well as sodium, calcium and magnesium. Thus, it was the drinking water in general rather than any specific constituents that was associated with the diarrhea in infants. The conclusion that the diarrhea was caused by sulfate alone was not scientifically or medically established by the article.

The section entitled "Summary of Findings" on page 4 of the Economic Impact Analyses indicates that the estimated cost of the proposed MCLGs/MCLs for all the inorganics will cost $87 million per year (corrected in the addendum to $77 million per year), of which the cost to lower sulfate levels will be 77 percent. At the bottom of page 5, about 1,087 water systems are estimated to violate the proposed sulfate MCL of 400 mg/l. Chapter 3 is devoted to an analysis of

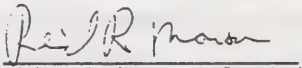
alternate sulfate MCLs. On page 13, there is an estimate that lowering the MCL to 400 mg/l will avoid 105,000 cases of diarrhea in children and adults. No documentation for this estimate is given. The remainder of the analysis dicusses the potential costs and benefits under a variety of assumptions.

From an epidemiologic standpoint, there are significant problems with the Economic Impact Analysis and the assumptions upon which it is based. I see no reasonable basis upon which to estimate the number of persons who would not develop diarrhea if the sulfate content in their water were reduced to 400 or 500 mg/l. Thus, conclusions such as contained at page 12 indicating "Compliance with the proposed MCLs is estimated to prevent hundreds of thousands of cases of intestinal distress and diarrhea due to sulfate" are without support. While I agree that an attempt should be made to do an analysis of the type that was done, I could see no documentation or justification for the assumptions that were made. For example, none of the materials reviewed contained any information concerning how the three reported cases of infant diarrhea compared to the total number of infants who were exposed to the same level of sulfate in drinking water. This is important because the 1968 article in the Canadian Medical Association Journal stated that waters containing 1000-3000 mg/l of dissolved minerals are very common and were of necessity consumed by many prairie people. The same article also stated that approximately 50 percent of the residents of the province drank water with mineral content of more than 1000 mg/l.

On page 15 of the Economic Impact Analysis a sensitivity analysis is done comparing different costs and cases. However, it is impossible to develop any sense of what a reasonable range is of the number of

cases of diarrhea that would be prevented by establishing and adherence to any of the proposed MCLs. It is conceivable that the number would be near zero. That being the case, it is impossible to estimate with any degree of reasonableness the relative costs or benefits of any of the proposed alternate MCLs discussed. In view of the foregoing, it is my opinion that the economic impact analysis is insufficient in that it fails to provide sufficient documentation and scientific justification for the assumptions upon which its conclusions are based.

DATED this 17th day of October, 1990.



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Education	Degree	Year	Field
North Dakota State University Fargo, North Dakota	B.S.	1958	Chemistry
Johannes Gutenburg University Mainz, Germany		1959	Nuclear chemistry
Harvard Medical School	M.D.	1963	Medicine
Harvard School of Public Health	Sc.M.	1967	Epidemiology and Biostatistics
Harvard School of Public Health	Sc.D.	1969	Epidemiology and Biostatistics

Certification

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Professional Experience

Year	Title	Institution
1963-64	Intern	Hennepin County General Hospital Minneapolis, Minnesota
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1968-69	Teaching Fellow in Epidemiology	Harvard School of Public Health
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Other Professional Activities

1972-75	Consultant, Boston Collaborative Drug Surveillance Program	Boston University School of Medicine
1974-75	Member, Commission on Nuclear Safety	Commonwealth of Massachusetts
1975-79	Consultant, Connecticut Cancer Epidemiology Unit	Yale University
1975-83	Consultant, Drug Epidemiology Unit	Boston University School of Medicine
1976-81	Consultant, Boston Hospital for Women	Harvard Medical School
1977-	Consultant on Occupational Epidemiology	General Electric Company
1979-80	Member, Committee on Amines	National Research Council
1979-80	Consultant on Radiation Epidemiology	Systemedics
1979-83	Consultant on Occupational Epidemiology	Wyman-Gordon Corporation
1979-86	Consultant on Occupational Epidemiology	Stauffer Chemical Company
1980	Visiting Professor, 15th Graduate Summer Session on Epidemiology	University of Minnesota
1980	Instructor on Occupational Epidemiology, summer course on Principles of Toxicology	Massachusetts Institute of Technology
1981	Rapporteur, Epidemiology Section Monograph on the Evaluation of Carcinogenic Risks of Exposures in the Rubber Industry	International Agency for Research on Cancer
1981-86	Consultant on Ethylene Oxide	Johnson & Johnson

1982-83	Member, Committee on Non-occupational Health Risks of Asbestiform Fibers	National Research Council
1982-84	Breast Cancer Task Force	National Cancer Institute
1982-84	Consultant on Beryllium	National Institute for Occupational Safety and Health
1982-89	Advisory Committee on Phenoxy Herbicides	Department of Health and Human Services
1983, 86	Consultant on Occupational Epidemiology	American Petroleum Institute
1983-85	Member, Scientific Committee 76 on Effects of Radiation on the Embryo-Fetus	National Council on Radiation Protection
1983-86	Consultant on Love Canal	Environmental Protection Agency
1983-86	Member, Commission on Hazardous Waste Liability	Commonwealth of Massachusetts
1983-88	Consultant, Vietnam Veterans Mortality Study	Veterans Administration
1983-	Consultant on Occupational Epidemiology	Amoco Corporation
1984-90	Peer Review Committee for the Krummrich Study	Northwestern University and Monsanto Company
1985-	Consultant on Occupational Epidemiology	Xerox Corporation
1986-	Acrylonitrile Study Advisory Panel	National Cancer Institute
1986-	Consulting Editor	American Journal of Industrial Medicine
1987	Peer Review Committee	International Agency for Research on Cancer
1988-90	Consultant on Drinking Water	Environmental Protection Agency
1988-90	Consultant on Talc	National Institute for Occupational Safety and Health

1989-	Associate Editor	Cancer Research
1989-	Peer Review and Advisory Panel for the Beaver Valley Study	Epidemiology Resources, Inc. and ARCO Chemical Company
1989-	Consultant on Epidemiology	Medical Research International
1990-	Technical Advisory Committee for the Epidemiologic Study of Nuclear Utility Workers	New York University and Electric Power Research Institute

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B. Other Communications

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C 20460

EPA-SAB-EHC-89-030

July 17, 1989

OFFICE OF
THE ADMINISTRATOR

Honorable William K. Reilly
Administrator
U.S. Environmental Protection Agency
401 M Street, S.W.
Washington, D.C. 20460

Subject: Science Advisory Board's review of the SULFATE health criteria document

Dear Mr. Reilly:

The Metals Subcommittee of the Science Advisory Board's Environmental Health Committee has completed its review of the Drinking Water Health Criteria Document for Sulfate dated August, 1987. The review was conducted December 8-9, 1988 at the One Washington Circle Hotel in Washington, D.C. Participants in the review are listed in Enclosure 1. The Subcommittee review focused on three major issues:

Should a lifetime Drinking Water Equivalent Level (DWEL) be set for sulfate?

Should an acute DWEL be set to protect children?

If an acute DWEL is set, what is an appropriate level?

The Office of Drinking Water proposed an acute DWEL of 200 mg/l based on the Saskatchewan data (Chien L., Robertson H., Gerrard JW., 1968) reporting diarrhea in infants ingesting formula prepared with water containing sulfates in concentrations from 630 to 1150 mg/l. The lower value of 630 mg/l was used, with an uncertainty factor of three (rather than the more typical value of ten, because of the low toxicity of sulfates and the apparent capability to acclimate to sulfates in drinking water in a few days), yielding the 200 mg/l value for sulfate.

After considerable discussion, the Subcommittee recommends that the sulfate document be referred for public comment. We cannot at this time, with the data presented, support the setting of an acute DWEL, and concur with the program's position that the data do not allow the setting of a lifetime DWEL.

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The Subcommittee felt some sense of frustration with the data available to the Office of Drinking Water (ODW). The program staff seems to have done a thorough review of the literature--some 53 studies were cited. Of this entire body of data, however, only eight studies provided information useful in quantifying effects and attempting to calculate a DWEL (See Enclosure 2). Unfortunately, taken singly or in toto, this subset does not provide data adequate to determine either a chronic or acute DWEL.

Each study seemed to be lacking in some specific dimension, and could not be related coherently to other data. We believe that ODW should attempt to get more detailed information from authors of the National Academy of Science Safe Drinking Water Committee report (1977), and the Moore (Moore, EW. 1952.) and Peterson (Peterson NL., 1951) studies to determine if they could be used to develop a better foundation for calculating a DWEL. It may also be useful to contact the Canadian authorities to get additional information on the health effects noted in the Saskatchewan data (cited above) used to formulate the proposed DWEL.

Finally, even taking into consideration the somewhat inchoate data, a majority of the Subcommittee believes that ODW has used too high an uncertainty factor in calculating the proposed DWEL. Since the mode of action for sulfate is fairly well known, and some human data are available, an uncertainty factor of 1.5 seems more appropriate than the proposed figure of 3.0.

Detailed comments on editorial and technical issues have been separately supplied to the program office. The Subcommittee stands ready to revisit this issue when additional data are available.

Enclosures

Dr. Raymond Loehr, Chairman
Science Advisory Board

Dr. Arthur Upton, Chairman
Environmental Health Committee

Dr. Bernard Weiss, Chairman
Metals Subcommittee

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